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Withdrawal From Eastern Crude Stocks Followed By Advance In Price

Staff Special
CLEVELAND, Jan. 2

JUST before New Year, crude oil prices were advanced in two widely separated territories and in dissimilar grades of oil. On Dec. 28, The Texas Co. advanced the price of Mexia and Currie crudes 20 cents a barrel, bringing the former to $1.35 and the Currie grade, which tests 40 degrees and better, to $1.80. This company had previously advanced both these grades 10 cents on Dec. 14. The Humble Oil & Refining Co. met the last advance at once.

On Dec. 30, the Joseph Seep Purchasing Agency advanced the price of Pennsylvania, Cabell, W. Va., and both grades of Somerset, Ky., crudes 25 cents a barrel. Pennsylvania crude, under the new posting, is $3.25 a barrel; Cabell, $2.11, Somerset light, $2.15 and Somerset heavy, $1.90. The prices on the latter two grades are six cents more where the oil has been run from leases on or after Oct. 1.

The advance in Eastern grades came as a surprise, generally. Of the Pennsylvania grade, there is a daily production of about 45,000 barrels daily, inclusive of the West Virginia crude and that which classifies as Pennsylvania grade produced in southeastern Ohio. The U. S. Geological Survey shows a decline in stocks of what it terms Appalachian crude, November compared with October. This decline was small, but does indicate a condition of withdrawals of oil from storage. There has been, as always, premium paying for the Pennsylvania grade, but no greater, if as great, as during the summer. The only authoritative answer at could be given to the question of why the advance was made, would come from the Seep agency, and with characteristic modesty, this it declines to do.

The decline in stocks of this Appalachian region, which does not include the Somerset grades, was only 7000 barrels from the October figures. There was, during the month, an increase in the amount of runs to refineries, the total reported on this including Kentucky.

Whether this advance presages raises in price over the country generally is a question that should be answered within two or three weeks. There was a small withdrawal from storage during November of Mid-Continent light oils, as there was in the Appalachian territory, and the total addition to all stocks of domestic crude not including California was only 142,000 barrels. Stocks of all domestic oils and Mexican crude held in this country increased 954,000 barrels during November, the smallest since September, 1920.

Rumors, insistent but so far impossible of confirmation, are prevalent in Tulsa that Mid-Continent crude is to be advanced in price within a very short time. Although of course not much faith ordinarily may be placed in rumors, it is noteworthy that the last two changes in price were preceded similarly by a flood of rumors, gradualy gaining in certainty until the actual fact was announced. Talks with a number of leading producers reveal the general opinion that a raise is coming. None of them would hazard a guess as to the date but most of them would not be surprised if it should come any day.

The recent 25 cent increase in Pennsylvania crude is looked upon as a purely local move with no direct connection with Mid-Continent conditions. Insofar as it indicated an upward trend in crude generally, naturally having a tendency toward causing higher prices for refined products, it has its phychological effect on the market, but the opinion is general that Mid-Continent conditions warrant an increased price without reference to the Pennsylvania situation. Recent increases in Wyoming and in the Mexia and Kosse districts of Texas, also are looked upon as of mostly local significance, although at the same time having a favorable reaction on the market generally.

Much interest is manifested in statements made by James E. O'Neil, of the Prairie, before Senator LaFollette's investigating committee, especially where he stated that his company is now buying about 110,000 barrels a day and is producing about 26,000 barrels. The wide discrepancy between this figure and the statement of the Prairie Pipe Line Co.'s monthly pipe line shipments, which have been in the neighborhood of 190,000 barrels a day for the past three months, confirms the widely held belief that the company has been drawing to a considerable extent upon stored oil to fill its requirements. Mr. O'Neil stated also that the payment of premiums had resulted in a loss to the Prairie of 60,000 barrels of light oil a day and a great deal of conjecture is aroused as to how much of that oil the Prairie has been able to regain through its graded prices. That it has not benefited largely as yet through this plan is generally believed.

That Oklahoma production is about to start on a considerable decline is another belief generally held by well informed observers, and all present indications point to the correctness of this belief. With the single exception of Tonkawa, every field in the state is going into a period of decline or has been in such condition for some time and there is no prospective area in sight at present which gives promise of being able to have any considerable effect on the situation.

Summed up, the situation looks bright for Mid-Continent light oil, which will undoubtedly be in great demand during the coming spring and summer, especially if Oklahoma's production takes the drop expected of it. In the event that this decline assumes considerable proportions, price advances undoubtedly will be made in order to stimulate drilling and these will have the effect of increasing the lower grades as well, as certainly not many Oklahoma operators are going to drill in localities where they now stand a chance of getting only 90 cents or $1 for their oil. Producers of low grade oil, however, are confronted with the pressing effect of Smackover with its large amounts of fuel oil thrown on the market. Shipments of California crude in tankers through the Panama Canal to Atlantic points also is an unfavorable factor in the situation from the standpoint of the low gravity producer. It is not believed, however, that this movement can possibly attain such proportions as to have much effect on Mid-Continent prices.

Recent advances on Mexia-Currie grade, together with increases affecting small settled production in De Soto and Red River parishes, Louisiana, are explained by need of The Texas Co. for crude of light refinery content. This company invariably led the advances. Although the higher postings were immediately met by other purchasers the ultimate result of advances would be to encourage drilling in the territories affected and thereby bring about the greater quantities of crude for the pipe lines to handle.

It is considered significant, however, that Mexia crude at $1.50 a barrel takes a higher posted price than the lower gravity test oils of the Ranger territory, which latter ordinarily are regarded as much more valuable in refinery practice because of cylinder stock content.

* * *

November Stocks Increase Smallest Since Sept. 1920

WASHINGTON, Jan. 1.—The November report of the U. S. Geological Survey reflects further improvement in the crude oil situation of the United States. This is particularly true of light oil production. While there was an increase in daily production of 51,600 barrels. California was responsible for nearly 35,000 barrels of this.

Imports gained only slightly, the total being 6400 barrels daily. Exports of crude increased 4600 barrels daily over October and daily average consumption of domestic and imported petroleum increased 74,978 barrels. The net

result was that total stocks increased 954,000 barrels, the smallest increase since September, 1920.

Daily Average Production By States

	Nov. Daily Aver. Prod.	Change over October
Oklahoma		
Osage County	121,700	+ 5,893
Rest of State	293,015	+ 868
Total	**414,715**	**+ 6,761**
California	**467,851**	**+34,966**
Texas		
Cent. and North	193,000	— 5,774
Coastal	95,567	— 1,272
Total	**288,567**	**— 7,046**
Louisiana		
Northern	79,334	— 5,827
Coastal	4,933	+ 288
Total	**84,267**	**— 5,539**
Kansas	**84,300**	**— 22**
Wyoming		
Salt Creek	82,967	+21,031
Other Fields	20,813	— 1,293
Total	**103,780**	**+19,738**
Illinois	**24,267**	**— 507**
Kentucky	**24,173**	**— 446**
Arkansas	**32,667**	**+ 5,086**
Pennsylvania	**21,067**	**— 352**
Ohio		
Cent. and Eastern	13,067	— 288
Northwestern	5,333	— 377
Total	**18,400**	**— 665**
West Virgiina	**18,100**	**— 190**
Montana	**8,033**	**— 161**
New York	**2,833**	**+ 91**
Indiana		
Southwest	2,400	+ 13
Northeast	600	— 77
Total	**3,000**	**— 64**
Colorado	**253**	**— 28**
Tennessee	**27**	**+ 1**
Total	**1,596,300**	**+51,623**

Stocks of Crude On Last Day of Month
(Thousands of Barrels)

	November Stocks	Change over October
A. Domestic		
Appalachian (N. Y., Pa., W. Va., East and Cent. Ohio)	5,943	— 7
Kentucky	2,957	+ 53
Lima—Indiana	659	— 17
Ill.—S. W. Indiana	10,031	+ 179
Mid-Continent: (Okla., Kans., Cent. and North Texas)	137,251	— 294
North La. and Ark	15,279	+ 13
Gulf Coast	25,431	+ 360
Rocky Mountain	1,475	— 145
California (Gross)	59,755	+ 2,185
B. Mexican in U. S. Atlantic Coast		
Crude	6,113	— 163
Topped	2,508	— 131
Gulf Coast		
Crude	6,990	— 769
Topped	1,464	— 310
Grand Total	**275,856**	**+ 954**

Estimated Consumption (Deliveries to Consumers) of Domestic and Imported Crude in Barrels.

	Deliveries Nov. Daily Average	Consumption Change over Oct.
Appalachian	77,733	+ 2,959
Lima—Indiana	6,500	— 1,565
Ill.—S. W. Indiana	20,700	—11,203
Mid-Continent (Inc. Ark. and No. La.)	813,367	+31,819
Gulf Coast	88,500	+16,597
Rocky Mountain	116,900	+17,674
California	395,033	+ 4,452
Exports Domestic Oil	28,533	+ 5,501
Imported crude consumed in U. S.	291,233	+18,846
Total Consumption including exports	**1,818,733**	**+56,731**

Imports and Exports

	Nov. Daily Average	Change over Oct.
Imports		
From Mexico	245,467	+ 6,499
Exports	28,533	+ 4,630

Days' Supply Since October, 1921

October	120
November	117
December	120
January	136
February	148
March	146
April	173
May	158
June	159
July	161
August	168
September	166
October	161
November	155

Big Producer In Light Oil Pool Of Smackover

Staff Special

HOUSTON, Jan. 3.—Pat Marr et al have completed No. 1 LeRoy starting off at 8000 barrels daily at 2037 feet in 33-15-16 and 700 feet northwest of the No. 2 Saxon on property previously sold by Marr to the Texas Co. This completion indicates a northwest trend of Smackover light oil producing area toward Smackover Creek which forms the boundary a mile northward between Union and Ouachita counties.

The original R. S. Saxon well of Marr et al which is less than one quarter of a mile southwest of the LeRoy well was rated at 400 barrels maximum at 2012 feet. No. 2 R. S. Saxon was originally good for 10,000 barrels at 1984 feet and now is capable of producing 3000. Both are owned by The Texas Co., which completed No. 3 R. S. Saxon for four million cubic feet of gas at 2027 feet, and No. 1 C. L. Saxon on an original lease was a failure at 2035 feet.

A quarter of a mile north from Marr's completion on the LeRoy tract the Houston Oil Co. No. 1, John Etz, in the same section was dry at 2029 feet. Tarver et al No. 1 Saxon in Sec. 5, was a three million cubic foot gasser at 2003 feet. Turner et al's No. 1 Lang, in Sec. 8, was a five million foot gasser at 2008 feet. Russell et al's Goodwin was a two million foot gasser at 2048 feet and the Harris Drilling Co's No. 1 McElroy in Sec. 4 made 500,000 feet of gas at 2096 feet.

Clark & Melat's No. 1, C. L. Saxon, originally rated good for 8000 to 10,000 barrels maximum daily at 2011 feet was the well on property taken over by Doheny's Pan-American Petroleum Co. The record of the Smackover in light oil territory thus sums up to date with four producing oil wells and seven small gassers and failures drilled. The location of the various wells indicates spotted character of production as so far defined.

Smackover Crude Graded

HOUSTON, Jan. 3.—Effective Jan. 3, Standard of Louisiana posted Smackover 26 gravity and above at 75 cents and below 26 gravity, 30 cents. The new posting constitutes a differential between crude from the old heavy oil territory and the light oil area to the southwest.

Institute Committee To Discuss Railroad Sites

Staff Special

TULSA, Dec. 28.—Formation of a special committee of the American Petroleum Institute on "operating rules for loading racks, unloading points and storage along railroads," is announced by W. R. Boyd, Jr., assistant general secretary of the institute. An initial meeting of the committee has been called for Jan. 16, to be held in the institute's offices at 15 West 44th St., New York.

On the following day the committee is to meet with a sub-committee of the executive representing the American Railway Association and Colonel B. W. Dunn, of the Bureau of Explosives. That meeting will be at the American Railway Association headquarters on the 18th floor of the Underwood building. The institute committee and the meetings announced today are the result of a conference held recently at Chicago. At that time Mr. Boyd objected to revisions in American Railway Association Circular No. 2,084 which proposed to make retroactive all provisions of the regulations and threatened removal of thousands of bulk stations from present valuable sites. His objections were sustained by the railroad excutives with the stipulation that a system of reasonable operating rules be developed and put into effect.

The institute committee is composed of executives, traffic managers, engineers and construction men so that all angles of the question may be studied. The committee is as follows: W. R. Boyd, Jr., assistant general secretary of the institute chairman; R. W. Ostrander, traffic manager of the Standard Oil Co. of New Jersey, New York; J. D. Creveling, engineer for the Henry L. Doherty &Co., New York; F. W. Fischer, manager of the construction department of the Sinclair Refining Co., Chicago; H. W. Roe, traffic manager for Cosden & Co., Tulsa; J. A. Watterson, manager of the construction department for the Standard Oil Co. of Ohio, Cleveland; B. J. Burchett, traffic manager for the Shaffer Oil & Refining Co., Chicago; C. E. Woodbridge, sales manager of the Texas Co., New York; R. H. McElroy, traffic manager for the Standard Oil Co., of Indiana, Chicago; Henry Houseman, traffic manager for the Pure Oil Co., Columbus; H. B. Earhart, president of the White Star Refining Co., Detroit; C. L. Maguire, president of the C. L. Maguire Petroleum Co., Chicago; A. V. Bourque, secretary of the Association of Natural Gasoline Manufacturers, Tulsa; John D. Reynolds, secretary of the Western Petroleum Refiners Association, Kansas City; and C. D. Chamberlin, secretary of the National Petroleum Association, Cleveland.

LEXINGTON, KY., Dec. 30.—The offices of the Kentucky Oil Men's Association will be moved from the McClelland Building to the offices of Klair & Scott in the Trust Co. building. Thomas Scott, a member of this firm, was recently elected secretary of the association.

This Week's Oil News Summarized

Marketing

(Detailed Marketing News, Pages 89-104)

FOLLOWING the adoption of a policy of storing the gasoline output of Mid-Continent refineries rather than placing it on the market at or below the cost of crude oil and manufacture, Oklahoma and Kansas refiners have succeeded in raising the price of new Navy 1¼ cents in the last two weeks and that grade of motor fuel is now costing the jobbers 11½ cents a gallon in group 3 and 11 cents at north Texas plants.

The low price of gasoline has already caused the closing of some Mid-Continent skimming plants, and other refiners, not financially able to carry out a long program of storing their output, faced a similar situation. The advanced price, if the gallonage picks up with the New Year, as it is expected to, should enable them to forestall any shutdowns.

Some improvement was noted in the spot market in other districts. Inquires started flowing in at the end of the holidays and in the East refiners were more optimistic. In Pennsylvania, the increase in the posted price of crude oil brought more buyers into the field for straight run gasoline but blended fuels were weak, the demand being below normal for this season. Natural gasolines were weak in the Mid-Continent but manufacturers were endeavoring to hold their prices to the usual ratio with naptha which was selling for the same price that new Navy did two weeks ago.

Kerosenes have been weak in all markets although the demand for other burning oils has improved somewhat with the continued cold weather. With the exception of the Pennsylvania fuel, there has been practically no change in prices. Stocks in the Mid-Continent are not of great size and refiners are well satisfied to hold them unless the quotations for the spot market are met.

Viscous neutral oils have been more active in the East but the Texas lubricant market is unchanged from a weeks ago. Likewise, there has been no change in cylinder stock. The waxes are dull and the prices for spot goods a little lower.

Financial

(Detailed Financial News, Pages 100-102)

The stock market enters the New Year with a firm tone although for some weeks trading has been indulged in by virtually only the professional operators who have played first one and then another of the favorite stocks, running them up or down almost at will but always failing to attract much attention from the stock trading public.

Compared with a year ago prices are considerably higher for the leading oil shares but many companies were unable to conceal their weaknesses and large recessions in prices were made over the year. Some bearish factors now exist in the oil stock market, the chief of which is the large inventories of crude and refined oils held by most of the companies. Much of these inventories was accumulated at prices much higher than at present and unless an unusually strong consumer demand arises early in the New Year, it seems that some revisions will have to be made. The larger companies will be able to stand such losses but many of the smaller organizations will be seriously hit and adjustments will be reflected in lower net earnings.

In the stock market last week Producers & Refiners was the favorite in the oil list. The price was run up 7¼ points to 50⅛ or ⅞ point below the year's high reached in September during the great bull movement of 1922. Other stocks fluctuated within narrow ranges.

New Tide Water President

NEW YORK, Dec. 30.—Col. George T. Slade has been elected president of the Tide Water Oil Co. to succeed Robert D. Benson who has been chosen chairman of the board. Slade was formerly first vice president of the Northern Pacific Railway Co. Mr. Benson has been president of the Tide Water Oil Co. since May 21, 1908.

PARKERSBURG, W. VA., Dec. 30.—Located on Coal river, Sherman district, Boone county, the Pure Oil Co. completed and shot in the Berea grit, its No. 2 on the Prichard-Robson tract. It is good for 50 barrels a day.

INSIDE STUFF

The biggest men in the oil industry are telling on the witness stand before Senator LaFollette's investigating committee, the inside facts of their business—much information that has never come out before.

National Petroleum News has a staff writer at those hearings to put that information into readable form in the pages of the paper.

The committee sessions, suspended during the holidays, reopen Jan. 3. A full report of the week's proceedings will appear in the issue of Jan. 10, 1923.

Don't miss that issue—January 10.

Production

(Detailed Production News, Pages 49-64)

OPERATIONS generally were quiet over the holidays and the chief interest attached to price advances posted on Eastern crudes and the Mexia and Currie grades of Texas. The advance in the east was 25 cents while in Texas it was 20 cents.

Reason for these advances may be reflected in the November report of the U. S. Geological Survey, made public Jan. 1. This report shows that stored oil was drawn upon in the Mid-Continent and in the Appalachian region, while for the country generally an increasing healthy condition was indicated. Deliveries of crude oil to refineries exceeded domestic production during November by about 200,000 barrels daily. Expectation of progressive declines in Mexican production and in the light oil districts of the United States is back of the general opinion that crude oil prices generally will be advanced shortly.

Runs from wells in the Salt Creek field on Jan. 1 were cut to 20 per cent of their rated capacity, whereas 40 per cent had been taken since the first of November. This reduction was made for the purpose of cleaning up field storage during this month that a new test of all wells can be made for the purpose of establishing the potential production of the field. The Midwest Refining Co. now believes the open flow capacity of the field is 240,000 barrels daily.

HOUSTON, Dec. 30.—Yount-Lee Oil Co.'s third well on the Merchant tract on the northwest side of the Hull salt dome, Liberty County, is a 6000-barrel producer below 3700 feet. The oil tests 26.5 gravity which is lighter than normal coastal crude.

DENVER, Dec. 29.—The top of an oil sand has been reached at a depth of 1500 feet in the test of the Panuco Oil & Transport Co.'s well near Morrison, according to reports received here. Production had not been expected in less than 2000 feet.

Be Sure To Read

(Following are the high spots in the news of the oil business this week.)

Advances in eastern crudes and Mexia-Currie grades in Texas strengthen rumors of coming advances in Mid-Continent oil. Page 17.

Withdrawals of stocks in certain districts and increasing consumption over October shown in the Geological Survey report for November. Page 18.

The jobber should develop his business by intensive sales methods rather than through giving away costly equipment. Page 21.

Analysis of railroad conditions shows no danger of great delays in shipments due to bad weather. Page 22.

Senate's gasoline investigation takes up again Jan. 3. Page 20.

Salt Creek runs reduced to 20 per cent of wells' production, to clean up field storage, preparatory to making new test of potential daily output of field. Page. 53.

LaFollette Resumes Inquiry Into Gasoline Situation

By Special Correspondent

WASHINGTON, Jan. 1.—Resumption of the senate's gasoline investigation was scheduled for Jan. 3.

The program announced when the fact that the hearings were to be resumed Jan. 3 was made public, called for the appearance of H. C. Folger, president, and other officers of the Standard of New York on the first day; John Sealy, president and A. G. Young, assistant treasurer of the Magnolia Petroleum Co. on the following day; and William F. Gates, president of the Prairie Pipe Line Co. on Jan. 5.

Thus far the investigators have not found anything that to them seems to indicate a desire on the part of any of the oil companies to conceal anything. The witnesses so far examined have answered all questions frankly.

Following the testimony of these witnesses it is at prescent the purpose of the committee to call witnesses who will throw light on the cracking patent situation.

Houston Cracking Plant Makes Export Product Only

Staff Special

HOUSTON, Dec. 28.—The first plant on the Houston ship channel to manufacture light oils for export only, is about to be completed by the Houston Terminal Refining Co. This concern recently acquired the old Turnbow refinery and is converting it into a pressure still plant for the manufacture of gasoline from gas oils. The entire output of water white products is to be canned in the plant, and exported to the Far East.

The present intention is to make no lubricating products. Purchased gas oil is cracked in the plant, canned and exported directly from the Manchester wharfs to the Far East trade. Thirty-six cars of gasoline are now being canned to fill contracts beginning prior to operation of the stills. The stills, which will start operation about Jan. 1, have daily charging capacity of 1500 barrels.

A battery of six pressure stills has been contracted for with the M. W. Kellogg Co., which controls the Fleming process. The first unit will be completed and in operation the first of the year; the other five following as soon as possible.

Late in August, the Houston Terminal Refining Co., under the direction of Robert R. Kelly, of Houston, as president, acquired the properties of the Turnbow Oil Corp. The ship channel plant, which previously had been sold to Bassett Blakely at a receiver's sale, consisted of an 82½-acre site 1500 feet back from the channel, with right of way and pipelines to the ship channel; 12 stills of 80-barrel capacity each, arranged for continuous running; condensers running tanks, power plant, cooperage shop, machine shop, canning plant, and two 500-barrel crude stills which are being held in reserve for the possible use in manufacturing lubricating oil at a later time.

The canning plant is one of the most modern and complete installations of its kind. The canning machine proper has a capacity of 14,000 cans in 10 hours. With the addition of a third "capper" this can be increased. The cans are handled by automatic conveyors, bringing the empties to the machine, filling them, capping them, carrying the full cans to the solderers, and from there on into the warehouse and out into the cars, where they are stacked by hand. The cars carry the canned products to the wharf for loading.

Southern Receiver Named

TULSA, Jan. 2.—J. W. Woodford of Tulsa, president of the Title Guarantee & Trust Co., was appointed receiver for the Southern Oil Corp., by Federal Judge Pollock of the eighth circuit court sitting at Kansas City on Dec. 22. Appointment was sought under foreclosure proceedings brought by the Central Trust Co. of Illinois representing bondholders. Chicago offices were closed on Dec. 23 and books and records were moved to Tulsa where auditors are to make a complete check. The Kansas City sales office is to remain open.

Connelly Takes Vacation

CLEVELAND, Jan. 1.—W. L. Connelly, vice-president and general manager of the Mammoth Oil Co. stopped over a few hours here en route to the southwest. He will go to Mexico and to the West Indies, spending about three months on this trip which is primarily a vacation. Mr. Connelly, who spent the greater part of the past year in Woming, directing the development of Teapot Dome, left there Dec. 1 after being instructed by his physician to take a long rest. The high altitude of Wyoming was chiefly responsible for Mr. Connelly's finding himself rather low in strength.

Standard Superintendent Dies

SHREVEPORT, Dec. 29.—James Edward Todd, aged 42, superintendent of the production department of the Standard Oil Co. of Louisiana, also one of its directors died at a local sanitarium after an illness of several months and was buried yesterday from Scottish Rite Cathedral, services being in charge of the Masons. Dr. H. F. Brooks, pastor of the First Methodist Church officiated.

Mr. Todd began his oil career 22 years ago at Corsicana, Texas and worked from the bottom to the top of the ladder. In 1908 he moved to Trees City, La., with the Gulf Refining Co., and five years ago came here. He is survived by his wife, two daughters and one brother, W. O. Todd of California. Members of the oil fraternity here were pall bearers.

WASHINGTON, Dec. 29.—Following conferences with representatives of the oil industry, the American Railway Association through M. J. Gormley, chairman of the car service division, has issued a supplement No. 7 to Circular CSD 87 referring to the issuing of embargoes and putting petroleum products in a preferred classification over which only live stock and perishable goods have precedence.

Petroleum products are given preference in territory where complete embargo is not essential, over non-perishable food. Supplies for oil refineries and oil and gas wells rank fifth in order of exemption and empty tank cars sixth.

Refiners Plan Curbing Unscrupulous Brokers

Staff Special

TULSA, Dec. 29.—Establishment of a definite standard for brokers handling refined oils as a means of curing practices which are considered undesirable may be undertaken by the Western Petroleum Refiners Association and the Association of Natural Gasoline Manufacturers.

The idea was given expression at a meeting of representative refiners and natural gasoline manufacturers held in the offices of the Mid-Continent Oil & Gas Association here today. It is expected that a joint meeting of the executive committees of the two associations may be arranged in the near future.

Dissatisfaction with current conditions in the motor fuel market was evident at the opening of the meeting. Some refiners felt that blenders have been responsible for low prices on motor fuels because of the sale of motor natural gasoline or blends at prices considerably below the established market on straight run products.

Blenders, on the other hand, contended that sales campaigns of the refiners have been largely directed towards establishing in the minds of the trade the idea that straight run gasoline is necessarily superior to blended. Fighting against the often repeated sales arguments of refiners, the blenders complained that they had been forced to reduce prices in order to sell their products.

Discussion of specific instances brought forth charges that unscrupulous brokers have often bought blends and sold them as straight run gasoline. They have used the purchases of blends at low prices as a lever to beat down the straight run market, it was charged. Statements were made that brokers have contributed largely to the recent demoralized market on gasoline through their policy of selling below the market.

It was stated at the meeting today that the refining industry is the only industry in the country which permits brokers of unscrupulous character and little or no capital to operate without regulation. The requirements of cotton brokers in the way of finances and the strict supervision given members of the New York Stock Exchange were cited as examples which might well serve as a model in the petroleum industry.

Legitimate, responsible marketers were not criticized by the refiners or blenders. They agreed that such organizations are a necessary adjunct to the business.

Present opinion is that the refiners, blenders and natural gasoline manufacturers may evolve a questionnaire to be sent to brokers requesting information which may establish their status. Sales territory in which a marketer may have established business connections and in which he expects to work, volume of business transacted over a certain period and capital employed in the business may be items included in the proposed questionnaire.

Since the practice of producing kerosene and extremely heavy naptha blends has been largely discontinued, it was suggested that the marketing of blends, as such, might possibly be discontinued in the future. It was pointed out that under present standards blends offered largely conform with straight run products in specifications. Quality is claimed to be the same. No action was taken on that subject at the meeting.

Marketers Must Meet Active Competition

By Warren C. Platt

CLEVELAND, Jan. 2

THE recent decision of the Wisconsin circuit court* that the Standard Oil Co. of Indiana was not guilty of unfair competition and rebating in leasing sites from garage men for their gasoline pumps and tanks, should serve to set the oil industry to clearer thinking on the marketing subject than has been indulged in to date.

The essence of the Wisconsin decision, it should be remembered, has been the contention of many Independent marketers elsewhere in the country from the time the pump and tank contention appeared, and these marketers have successfully maintained that position in the courts much to the embarrassment of the Federal Trade Commission, which, of course, never was noted for basing its decisions on sound law.

Many other marketers have believed the same as those in Wisconsin but have not yet been able to make that contention stick in a court.

In view of the many court decisions now it might be well for the whole industry to give serious consideration to this angle:

That the extension of facilities for distributing petroleum products, providing the terms are somewhere within reason for the service and are substantially the same to all under similar conditions, is merely a part of the necessary expense of doing business and the extent a marketer will go in it will depend on the price he cares to pay for that business.

Competition is going to work out the story. Competition is going to cause a marketer to put out more salesmen, better salesmen, put on more trucks to take care of a customer's needs more promptly, and in that competition he will paint his plant and his trucks and spend more money for other advertising than he ever has done. We have been accustomed to look upon all of that as entirely legitimate. Under the stress of competition, some companies may go further and make special arrangements with garages for distributing their products. Competition may get to the point where it may be difficult to set the dividing line between unreasonable expense and downright bribery but as competition will reign all the way from the well to the consumer the company that indulges in expense which is unreasonable from a good business standpoint, and in bribery, will not be here to finish the story, be it Standard or Independent. But at the same time this same tense competition may force some marketers to hire too expensive salesmen and spend too much for advertising. What then? Bankruptcy, regardless of who they are.

May Pay Most Dearly

The pump rental may get high, too high for many Independents to reach, but if the Standard undertakes that policy and figures on getting away by the sheer weight of its dollars, it will pay most dearly for it.

The Standard is helping the Independents to fight it by developing the drive-in service station. While that is looked upon as a good sized investment by many Independents, nevertheless it is possible for many more than are using it. It is not necessary to put as much money into those stations as has been the practice, nor is it necessary to perch them on every street corner. Rather, the wise small marketer will place few stations in advantageous locations and build them at an absolute minimum expense, figuring on low cost first and using some taste in the color of the paint for good looks, along with a few flowers and shrubs. Then he will put out salesman to drive business into those stations, probably using advertising and coupon books.

There is no reason why the gasoline stations should become as numerous and competitive as groceries. Car owners will and do drive many blocks, even miles, now to reach the station they wish to patronize. The good grocery today goes after business for miles around. The poor one doesn't and it never gets to be a good one.

Within three quarters to a mile radius of where I am writing this my home, are 11 drive-in stations and a half dozen or more garages and some pumps in front of other stores. To half of those stations I would have to go only a block or two out of my way down town. Most of these stations have been built in the last several years. But they are all sitting there, with all due respect to my friends who own them, like a lot of one-horse groceries and not one has called or mailed a request for my business. Pardon me, I forget the twelfth station opened the other day and which sent a letter telling me about it. Presumably they all want business but, so far their desires in this direction are a dark secret.

Several of these stations advertise in the daily papers every once in a while, but why, if they think enough of my business to plant a $10,000 and more investment in my neighborhood and maintain that at a loss as many of them must at least for some time after opening—they don't want my business badly enough to have salesmen make an initial call at my home, and write some literature and do it again, a few times, is more than I can see.

Presumably the answer is that gasoline gallonage has come so easily that they don't have to hustle for it. But that time is fast passing. The man who wants business in the future is going to do more than the one-horse grocer who just sits behind a pile of vegetables with a decrepit horse and wagon in front to "advertise" his delivery "system" and waits for business. That kind of an oil man is going to wait until the sheriff calls.

The cost of distributing gasoline must be cut down, and it is going to be cut down largely by increasing gallonage through stations. Few stations today can be said to be operating anywhere near capacity. The chances are few oil companies have any idea, or any figures on which to base an idea, as to what the maximum capacity of a station might be. But we know of two-pump stations doing two and three thousand gallons on certain peak days and only two or three hundred on other days. "Peaks" in hours and days cannot be avoided to a certain extent but there are "valleys" as large as the Yosemite which the industry would do well to fill before putting in many more stations

There is a certain amount of new gallonage—new car owners which is helping to support these stations but isn't a good part of your gallonage due to the casual shifting of the public? Doesn't the public buy from one station today and another tomorrow quite an extent? Oh yes, you have regular customers, but just stop to count them in comparison with all your customers. You'll be disappointed.

The small city and town offer substantially the same situation slightly different in detail only. The garage man in the small city may have more of a personal following than the man in the large city but by the same token the local oil man has or can get a personal following too.

Remedy in Leasing Case

So we say if the pump leasing proposition should get too steep for the smaller marketer, let him think of installing a few or maybe only one service station at a minimum expense and then put real salesmanship around it and fight for a maximum gallonage. Put salesmen out with coupon books for cash only of course and some sales literature to leave with prospects possibly also a picture of the station, and a street diagram so it can be easily found, and pound the bushes for many blocks around for business, and then go over the same route again. A $10 sale, such as represented by a coupon book, is worth quite an effort going after. The margin is small but the prospects are many and close together. That marketer will win out and at a profit.

It isn't going to make much difference in the next few years what form competition takes, extreme competition is going to be here. If the Wisconsin court had decided against the Standard on leasing pumps, the Standard, being willing to pay that price for the business, would have found some other way to spend it. It might have been more salesmen, or more advertising, or more drive-in stations, dispensing it from soda fountains, or chain cigar stores, or what at all events, the Standard would have spent it for the business, and the Independents would have to meet that competition, just as they are doing now.

The thing always to keep in mind is, is the business worth the price? If it is, pay the price. If it isn't don't.

*See page 26, Dec. 27, 1922, issue of National Petroleum News.

Jobbers Need Worry Little Over Ability Of Roads To Serve Them

CHICAGO, Dec. 31

By Ward K. Halbert

STAFF REPRESENTATIVE

The accompanying story was written after consultation not only with representative railroad men in Chicago but also with traffic managers of oil refiners and jobbers. With market conditions uncertain, the jobber has been handicapped to some extent by not knowing to what extent the railroads had recovered from the paralyzing effects of the strike and how far he would have to take shipping difficulties into account in planning his purchasing policy through the winter. It was with this object of giving the jobber an insight into transportation conditions that this story was written. —Editor.

EXISTING railroad conditions over the country do not warrant any uneasiness on the part of oil jobbers regarding deliveries for the rest of the winter, in the opinion of traffic experts and transportation men in Chicago. Conditions are better, they declare, and are likely to improve rather than grow worse, in spite of weather and short periods of congestion at scattered points.

Marketers and refiners have been advising their regular customers, both oil jobbers and large consumers of fuel, to buy farther in advance of their needs, during the winter than they did in the early fall. Railroad men admit that such a practice is a good one for any kind of a hand-to-mouth buyer, regardless of the commodity he may be purchasing. The reason is that a cold snap might tie up several lines for a whole week at a time.

But abnormal rail conditions have injected new complications into the jobbing business. It began to manifest itself this past summer when jobbers in the middle west were glad to pay a quarter to a half cent more for a car of gasoline moving rather than buy far in advance of their requirements. A few dealers who took chances too far, got caught. In isolated cases they were obliged to turn trade away or borrow a tank wagon load of gasoline from some competitor. Basically the jobber's situation has not changed. The railroad situation has changed, however; and the season has changed. In this connection it might be well to quote an old one—"One man's guess at the weather is as good as another's."

Railroad Tonnage Off

American railroads now are enjoying a little breathing space which comes to them each year between Dec. 15 and Jan. 15. Railroad men say more freight is being moved now than at this time last year, but the general guess is that gross railroad tonnage on Dec. 30 was 10 per cent or more under Nov. 30. It usually is. The reason is that merchants have ceased to receive their additional Christmas stocks by Dec. 15 and do not begin to receive spring goods until after the middle of January.

A canvass of the oil trade in Chicago will show that most oil marketers have been getting good service from the Santa Fe recently. It was that line which got back to pre-strike schedule first and started spotting tank cars in northern cities, four or five days out of Group 3. But the Santa Fe is not the only line to stage a remarkable comeback. The Illinois Central, which serves Standard of Indiana territory from St. Louis and Memphis, without reaching Group 3, has built up a good record in the oil trade, as have the C. & E. I., and the C. M. & St. P.

Danger of Blizzard

The little cold wave which chilled the middle west just before Christmas delayed freight deliveries and had enough effect on car movements to leave a few isolated jobbers entirely without gasoline for periods varying from six to 48 hours. This spell of cold weather was not lasting, either. It just lasted long enough to show what some really bad weather might do. However, it is pointed out by railroad men, there is no reason to expect this winter to be worse than last from a freight standpoint, except that some of the railroads have not gotten their motive power up to standard since the strike.

If a jobber has been getting good service from the lines he depends on to serve him, he may reasonably expect to have this satisfactory service continue. But if the lines that connect him with his supply have been habitually slow and uncertain he has reason to take some additional winter cut precautions. Some of the Chicago marketers have suggested a margin of 50 per cent—allowing three weeks instead of the customary two weeks for a car to be delivered. A few jobbers have adopted that practice and say they can afford to keep it up for the winter because they have the storage room anyway.

The average oil train at present is moving with six to 10 fewer cars than under normal conditions, or about 300 tons off. The average oil train carried 50 to 55 loaded cars and between 70 and 90 empty tanks. Always to the advantage of the oil jobber is the fact that tank cars are the best class of railroad freight. They are well kept up by private interests.

Returning Tank Cars

Official reports and printed statements from railroad officials of late indicate that ordinary railroad rolling stock is in almost as good condition as it was before the strike, but that does not concern the oil industry so much as the condition of the motive power. Locomotives are said to be in less serviceable shape. Large orders placed with locomotive works by various roads tend to add weight to this rumor. A number of roads have some new engines in service, bought since the strike, and the falling off in gross tonnage tends to counteract the handicap of cold weather.

Since Nov. 15, about the time freight began to slack up the country over, there have been plenty of tank cars available for the oil trade. Roads have been returning them to refiners promptly. Such delays as have been recorded recently, have been due to congested yards and that condition is getting better since the railroads passed the year's peak load season. It is the general opinion that they can continue to do that, even though business picks up in the latter half of January as it is predicted.

Coal roads are the ones which are still burdened. The public still is demanding about all the coal the roads can handle from the mining districts, but even their peak is passed. Indicating that few of them are suffering, they are almost all soliciting business again, while a month or two ago their business solicitors were doing office work. Eastern roads are in rather worse condition than western ones, it is said, which again is encouraging to oil men in this section of the country.

1922 Strenuous Year

During October a number of western railroads broke tonnage records. The Santa Fe broke a record every few days during the month. The year had been one of good business but the output of grain and oil and cotton in the southwest was burdensome in the fall. Building material and road material was in demand, and the miners' strike threw coal into the October job for good measure. Other southwestern lines faced the same problem. And that peak has passed and the railroad men think they are equal to almost anything after accomplishing it.

One of the most unusual developments of the strenuous year is an accomplishment of the Illinois Central, in the form of a service bureau. The institution is operating in Chicago and is a year old this week. It grew during the 12 months, from a little handful of clerks trying to do a seemingly impossible thing, to an organization of 50 persons able to tell at any time the approximate whereabouts of any car on I. C. tracks. H. G. Duckwitz, a former trainmaster, is at the head of it and oversees the successful handling of 1000 to 1500 tracers a day.

Issue a Publication

Each day this traffic bureau gets out a mimeographed bulletin to 93 traffic representatives over the country. This buttetin is a ponderous thing. It has ordinarily 100 sheets printed on both sides and the pages are about 14 x 20 inches. This volume carries no information except whereabouts of cars, those received by the I. C. and those recently turned over to other lines. Of course, it has an index to expedite its use. As of date of its issuance, any traffic representative can locate cars as well as the main office, but of course the data loses value in the mails.

Oil men in Chicago have used the service with entire satisfaction. From the files of the office it is possible to keep within four to six hours of every car in the system. Letters of inquiry are answered every day, overhead wires are given preference and second to them, company telegrams. Inquiries from shippers in Chicago are answered while they hold the 'phone. The records in the office are about the same as may be found in the office of a car accountant—a month later. Mr. Duckwitz says he considers it an indispensable department linking the traffic and the operation departments.

Should a shipper call this department and give initial and number of car, its contents, the name of the shipper and consignee and date of shipment, he is advised at once "That car passed through ..... junction at ..... o'clock this morning."

THE EDITORS' VIEWPOINT

Back Up The Challenge

PRESIDENT O'NEIL of the Prairie Oil & Gas Co., testifying at Washington in the senate committee's investigation of the oil business, stated in effect that the government figures as to crude production and consumption and stocks were so incorrect that they could not be relied upon in analyzing the trend of the industry. This is a reflection on those government departments which have built up and followed for years their methods of compiling those statistics and upon the oil companies which voluntarily furnish their own figures as individual companies to make up the monthly reports for the whole country. More serious still is the fact that President O'Neil destroys the confidence of the industry and the public in the government's statistical report on the oil industry—the one complete report that is available.

The matter cannot be left as it now is. Having made such a charge it is the duty of Mr. O'Neil to the public and the industry to show just how far wrong the government figures are, how the government's methods are in error and how they can be corrected. The Bureau of Mines and Geological Survey officials have welcomed suggestions for improving their statistical service to the industry, this publication can testify. It is not necessary that the Prairie Oil & Gas Co. turn over to the public generally its figures, nor even the sources from which they are made up. But let President O'Neil probably the best posted individual in the country in this regard, show the government bureaus where they are wrong and how their mistakes can be corrected.

There has been plenty of criticism of the government's figures in times past from members of the industry, particularly in the Mid-Continent field. But those who challenge them seldom if ever give what they call the correct figures. Here the challenge is made in such a form that, unless the matter is carried further, there is implied the suspicion that the industry does not care to have the figures correctly gathered and interpreted.

It is inconceivable that mistakes should not occur, as the figures are now handled, particularly with crude stocks. When stocks are arbitrary totals made up and carried forward from month to month and year to year, they must be in error. A portion of what is listed as stocks is undoubtedly oil in such condition that it could not be refined. Perhaps there is some way of making an actual check of crude stocks or making a certain allowance for bad oil that will make the total figure a better guide. There could not be a better time to work this out, now that this open challenge has been made.

At one point in his testimony President O'Neil made the statement—in proof of the inaccuracy of the government figures—that crude run to refinery stills was shown as 1,624,400 barrels in February, 1921, and 1,387,667 barrels in June the same year. He said it could not be believed that the total refineries of the country could run more oil during a winter month than when the motoring season was well under way and demand up. Mr. O'Neil, when he made this statement, was talking from figures compiled by the senate investigators from government sources.

Where those figures came from we do not know, but they are not to be found in either the Bureau of Mines or Geological Survey reports for the months under consideration. The Bureau of Mines figures do show, however, more crude run to stills in February than June. There was a natural reason for this in this particular year. It will be recalled that the period of deflation and falling crude prices came upon the oil industry in the early part of that year. Refinery operations were curtailed and crude runs to stills show a pretty uniform falling off from the fall of 1920 until the last quarter of 1921.

The public is entitled to accurate figures as to the progress of the oil industry from month to month. We can not sit back for long and tell the public, "these figures the government puts out are all wrong. You cannot depend on them and we will not give you the true figures." If we cannot accept the government figures as they now stand, let the best posted men in the business tell how they can be made correct.

Old Man Overhead

THE Little Old Man of the Sea is still riding on the back of his unhappy victim, digging his heels into the ribs of his mount and jerking him to the right and left by the ears. But he is no longer a legendary curse; he is an actual modern Nemesis, appropriately known today as Old Man Overhead.

Overhead is the constant fixed expense of the company or individual as differentiated from the fluctuating day to day costs of getting and filling orders. Overhead goes on just the same whether business is good or bad, seven days in the week, 365 days in the year, with no deductions for holidays. It is easily expanded; it almost never shrinks unless a receiver steps in, and with the court's authority, cancels leases and terminates contracts. It is overhead that keeps a company treasurer tossing o'nights when volume of sales falls away.

Unused equipment, desks, telephones and filing cabinets are overhead; needlessly expensive quarters are overhead; above all, idle time of employes and machinery is overhead. Watch out for the little old man that he does not fill his pocket with stones.

(Reprinted from the December, 1922 issue of **The Lamp.**)

We Demand Our Rights

THIS day has brought a shadow into our lives. From Mr. W. W. Halstead, of Fort Worth comes the offer to sell us units in the Associated Bratcher Club at $10 each. The red ant in the gravy is his refusal to sell us more than 10 units.

Where is the Americanism of Mr. Halstead? Would he make of us a nation of skulkers and evaders? The tendency of man the world over is to acquire that which he is forbidden to have. But in compelling us to buy his units in the names of our relatives and friends just to get more than ten, Mr. Halstead is striking directly at those fine principles of integrity and straightforwardness which entered this country in the steerage of the Mayflower.

If Mr. Halstead persists in this arbitrary attitude, we shall shortly have an army of craven citizenry, prowling up dark alleys in search of the low-browed bootleggers of his units. We predict that the damage will not end with even that despicable occurrence. A man might conceivably accumulate enough Associated Bratcher units to satisfy his cravings after he passed the limit set by Mr. Halsead. Many would even be content with eleven. But, like the poor weakling who begins on headache tablets and winds up a victim to the most demoralizing of drugs, so will the purchaser of Bratcher units, if forced to obtain his requirements by stealth, seek something stronger. In time he will be buying the de-vitalizing certificates put out by Abner Davis.

Mr. Halstead says, "it is only in oil that the small investor has a chance to make a quick clean up." Surely a man's time is worth something, and the more units the quicker the clean up. Although, we would amend it to read "clean out."

No, Mr. Halstead, you can't get away with it. As a fearless champion of those principles for which our fathers ran at Bull Run, we shall complain to the authorities unless you remove that obnoxious restriction on the quantity of units to any one purchaser.

WHAT pikers the J. Rufus Wallingfords of the oil business in this country have been? In Europe they are now organizing a syndicate to control the oil business in the newly-organized states in Hungary, Austria and Czecho-Slovakia. A holding company in Switzerland passes out the rights for the various states, claiming all sub-surface mineral rights as well as everything on top of the ground.

THOSE Wyoming towns that are pleading to have the pipe line from Salt Creek and Teapot run through their precincts must figure they can go down and watch the 2:30 shipment of oil go through.

Seems every now and then as if someone tried to pension those sterling policemen on the oil beat—Supply and Demand.

Crankcase Oil Tests Feature Illinois Company's Lubrication Service

Staff Special

CLEVELAND, Dec. 23

AN elaborate crankcase draining service has been offered by the Corn Belt Oil Co., of Bloomington, Ill., for more than a year. This consists of analyzing the oil taken from a customer's automobile, and from it fixing a maximum mileage which a car may be run safely before it is necessary to have changed the crankcase oil.

The trade is circularized to get the business and after that follow-ups telling the motorist the requirements of his car, are used. J. L. Murray, treasurer of the Corn Belt company, says the experiments conducted for more than a year demonstrate that automobile manufacturers either have little recognized the danger of crankcase dilution or have been afraid to set a low maximum of mileage for the oil because it might add to sales resistance.

"In establishing a crankcase draining service," Mr. Murray said, "we decided to go about it intelligently. When a customer's car was drained, a sample of the oil was sent into the office for testing. The analysis covered gravity, flash, fire and viscosity. From three to six tests are made to arrive at an average safe mileage for the particular motor and the manner in which it is used.

Not Drained Often Enough

"In the start samples also were distilled to arrive at a knowledge of the percentage of dilution. A series of form letters were compiled covering all conditions and a card follow-up system was put in. This check-up of the condition of crankcase oil soon revealed the fact that 95 per cent of all cars tested were not drained often enough to protect the motor. It also developed the reason why cylinder grinding and piston replacement have become so profitable a business."

One of the form letters sent to a prospective customer sets forth this feature of the company's service:

"It is necessary to drain your crankcase before the oil becomes too thin to retain a film between the pistons and cylinders. If it is not done, rapid wear results, consumption of gas and oil increases, power is impaired, and very shortly an expensive job of regrinding has to be done.

"Our business is oils and lubrication. We know the correct grade of oil for **your** motor.

"We have installed a service that will guarantee you a very much longer lived and better running motor; lessened gasoline consumption and repairs.

"We do not guess at how many miles you may safely run your motor before draining it. Samples of the used oil from your crank case are put thru a laboratory analysis and a definite safe mileage determined. The draining and test service is FREE. You pay only for the oil.

"We will at a very nominal charge, completely grease and oil your entire car. During the greasing and oiling, which is done by experienced mechanics, the entire chassis is inspected and a report furnished you on any part needing replacement, repair or other attention.

"This inspection service will save you not only money, but a great deal of worry also."

Causes of Dilution

Another circular sales letter tells of the needs of proper lubrication, the causes of dilution and how the Corn Belt service works, talking particularly about conditions met with in winter driving:

"More than 90 per cent of all automobile motors are worn out before giving more than one-half of the service they should.

"Their rapid deterioration is largely caused by the dilution or thinning down of the lubricating oil by the heavy portion of the gasoline which passes down into the crankcase.

"With the coming of colder weather, it is necessary to choke the carburetor more in starting. Choking results in drawing into the cylinders a wet, heavy mixture, a considerable part of which is forced past the rings by the compression pressure. In many cases, the destruction of the viscosity or body of the lubricating oil is so rapid that it will not maintain a film between the sliding metal surfaces after a very short period of service.

"Motors of the same make and type vary in performance to such an extent that it is impossible to fix an average safe maximum mileage at which the lubricating oil should be drained and replaced.

"To meet these conditions and to furnish to our customers, a REAL LUBRICATING SERVICE, we have put into effect a system of analysis of the used oil from your crankcase that tells its exact condition and eliminates all guess work. These tests are also valuable in indicating the condition of your motor and carburetor.

"By a series of analyses of the oil at different mileages, it is possible to get a safe maximum on your individual motor. By these tests we can also determine the correct viscosity of the oil best adapted to your particular motor and condition.

"This service is furnished without cost to you. Run your car in and have it drained and tested, and save your motor. It is very expensive to discover suddenly that you are up against a job of regrinding cylinders and replacing pistons, rings and other parts. One such repair bill would pay for all the oil you will use in 10 years."

"Save It With Oil"

Another letter headed, "Save It With Oil," begins:

"With the approach of colder weather, it is necessary to look carefully after the changing of the oil in the crank case of your motor.

"In cold weather the motor is much harder to start and the carburetor must be choked more in order to draw into the cylinders a heavier mixture of gas.

"This heavier mixture is naturally in a wet or saturated form, and a considerable portion of it is squeezed past the rings by the compression, resulting in the thinning down of the oil in the crankcase very rapidly.

"It is our experience, covering a long series of tests of many different makes of motors, that the crankcase oil should be changed practically twice as often in winter as in summer.

"It is necessary also to use a grade of lubricating oil that will flow freely at zero temperature. Many motors are ruined every winter by the use of heavy oils, which become practically non-fluid when the temperature gets down to 32 above zero or below."

Then follows a paragraph instructing the motorist to warm up thoroughly his motor before starting the car in cold weather. It concludes with a tie-up with the company's lubricating service.

Recommendations Made

After tests have been made of oil taken from a crankcase, the customer receives a special letter reporting the findings in the analysis, making recommendations for the operation of the car, and setting a maximum mileage at which the car may be operated with safety to the motor. An individual letter sent to a Bloomington physician follows:

"On Nov. 25 we drained and refilled the crank case of your car, speedometer showing 8741 miles.

"The analysis of the used oil from your crank case shows Baume gravity 34, flash 120, fire 135.

"The oil has been used so long that it has become thinned down to the consistency of ordinary gas oil, which is practically the next cut below that of kerosene.

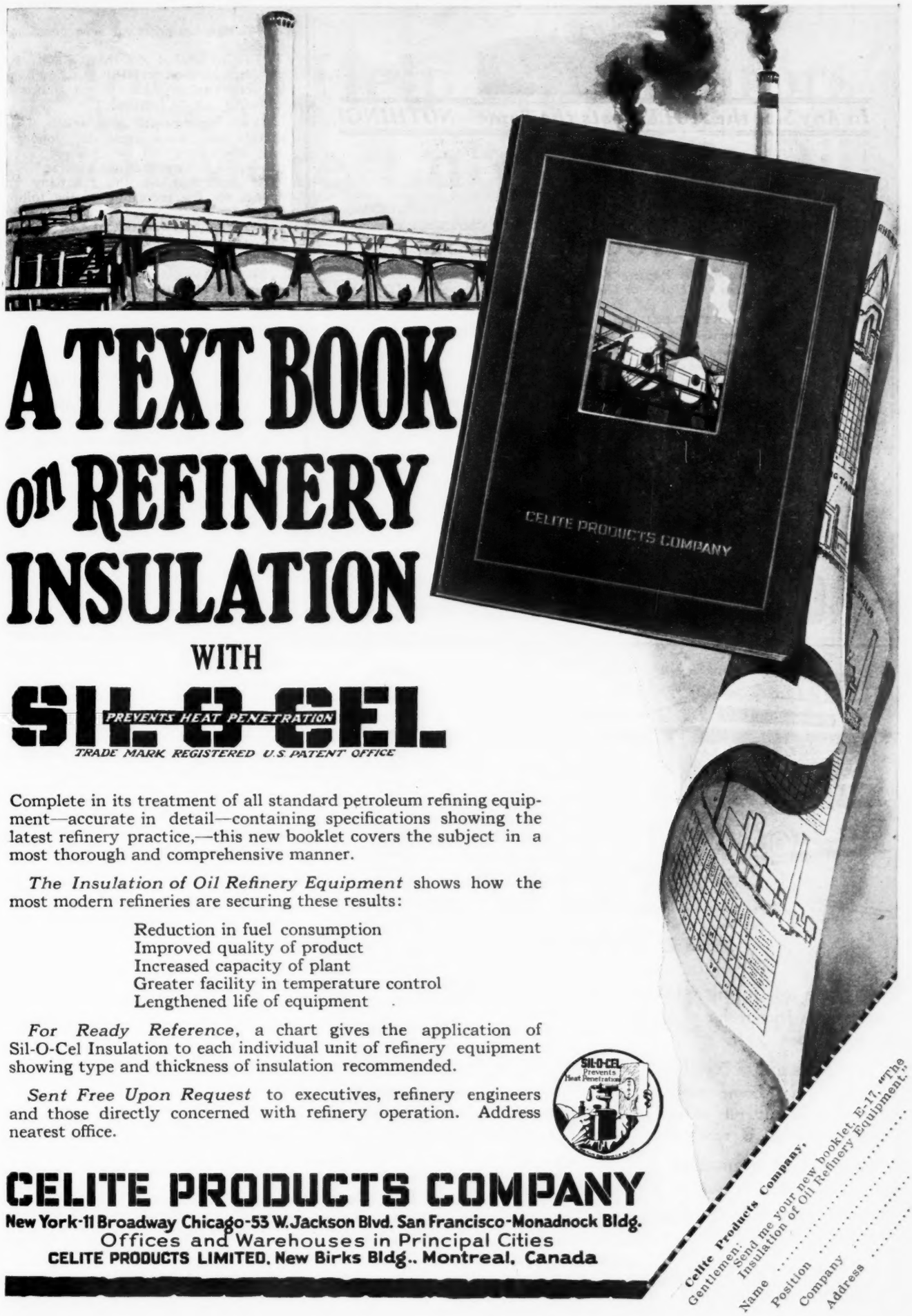
"We take it that this machine is used largely around the city for short runs, under which circumstance the choke has to be used excessively and the motor therefore never attains a normal runing heat.

"This condition results in rapidly washing the lubricant off the cylinder walls and by draining down into the crankcase, very quickly destroys the value of the lubricating oil.

"We would recommend that a sample be sent in from this motor at not to exceed 250 miles of service, and would further advise that radiator cover be used to cut off at least one half of the radiator capacity."

Another individual letter concludes: "We would recommend that this motor during cold weather be drained, refilled and test made at not to exceed 400 miles of service."

Another letter says: "The analysis indicates that the oil is in fair condition, both the flash and fire points being fairly well retained. We would advise that this case be drained again and another



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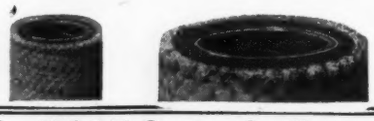
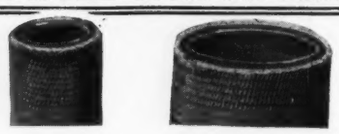


In Any Size the HOLE Costs the Same—NOTHING!



WHEN YOU BUY HOSE

What Are You Really Paying For? Dimensions, or Specifications? The Size of a Hole—or the Material that goes Around It?

Note the difference between TRIPLEXD (top of page) and ordinary hose shown beneath it. The TRIPLEXD increases in *strength* with each succeeding size. A standard ratio is maintained between inside diameter and the weight and character of material used.

The size of the Hole—inside diameter—costs us nothing. And we charge nothing for it. The weight and quality of material, and skilled workmanship, do cost us something. And they are *worth* something—to the hose *user.*

TRIPLEXD Hose is PRICED By WEIGHT —NOT BY SIZE OF INSIDE DIAMETER. And that weight includes not only quality material, but a peculiar skill in the treatment and assembly of that material—metal, rubber and cotton—which has no counterpart elsewhere.

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Eco air stations pay for themselves thru their power to pull to your station people who appreciate the clean convenient service Eco renders.

WESTERN MANUFACTURING COMPANY
314 SIXTH AVENUE, EAST : : OSKALOOSA, IOWA

test made at not to exceed 500 miles of service."

A follow-up postcard sent customers reads:

"Just to remind you that on ....., we drained and refilled the crankcase of your car, speedometer at that time showing ..... miles.

"Your motor will give much better service and last a great deal longer if the lubricating oil is changed as it should be before running too far."

A card kept by the company has spaces for the recording of the following data:

Name, address, make of car, mileage, gravity, flash, fire, refilled with (grade of oil) and date drained.

Form letters cover all conditions ordinarily met with in crankcase lubrication but occasionally an extraordinary condition is encountered and Mr. Murray writes a special letter covering this.

Mutual To Sell Wyoming Gasoline In Middle West

CLEVELAND, Dec. 29.—Mutal Oil Co. of Kansas City is entering this territory as an active marketer of gasoline, lubricating oils and other products. This is according to Roy E. Spear, assistant to Joe Walsh, vice president of the Mutual. Mr. Spear was in Cleveland on the double mission of selling some stuff and spendin~ the holidays with his parents who live here.

The prospects for building up a good business in this territory are very good, reported Mr. Spear after making a few calls on Cleveland jobbers. He stated he had inquiries for 95 cars of gasoline, 75 of them for spot shipment.

The gasoline will be shipped into the Ohio company's two plants, one at Glenrock and one at Cowley, Wyo. Mr. Spear says that the Mutual refinery at Chanute, Kan., has been enlarged and is turning out a fine grade of cylinder stock, using the Sharples centrifugal method of separating the wax. Some of this bright stock is now being sold in the marketing territory of the Pennsylvania refiners in competition with Pennsylvania bright stock, Mr. Spear says.

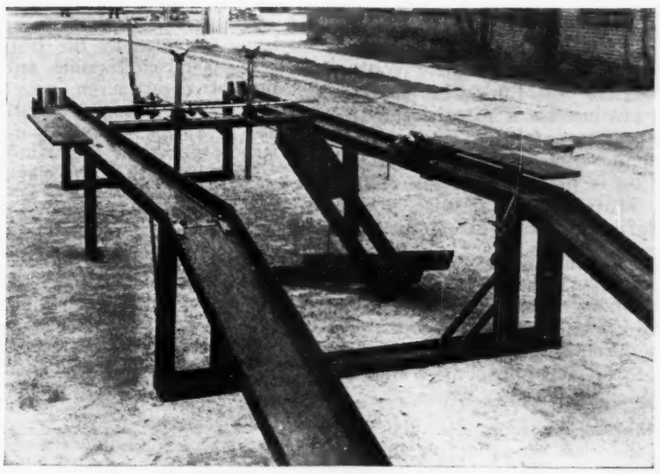
TULSA, Dec. 30.—Distributing facilities of the Kraton Oil Co. in Tulsa, including three filling stations have been purchased by the Empire Refineries, Inc. The stations are located at Cincinnati and Archer, Eighth and Boston and Sixth and Katy. Fred Wood from the Tulsa offices of the company has been placed in charge.

Plans of the company include the erection of additional stations in Tulsa and surrounding towns. It now has about 50 stations in Oklahoma, most of which are in the central and western portions of the state.

HOUSTON, Dec. 30.—The attorney general's department at Austin has given an opinion that it would be against public policy and a violation of the anti-trust laws for a corporation to buy property in Texas and lease it to tenants with the stipulation that the owner's products shall be sold exclusively on such premises.

The opinion was written by Assistant Attorney General Frank M. Kemp to W. H. Francis, general attorney for the Magnolia Petroleum Co.

How to Help Distributors Sell More Lubricating Oil



THE AUTO TABLE

HENRY B. JOY, daddy of the Packard and one of the great pioneer motor car builders, said years ago: "If we could only get ordinary round house treatment for our cars they would last forever." Round house treatment in railroading means adequate lubrication and a man in overalls poking the axles under your pullman to be sure that the journals are always greased.

Nobody wants to climb into an oily, grimy motor pit, so motorists buy gears and bearings instead of oil. Hence the Auto Table, which oil companies ought to give to their filling stations as quickly as they provide gasoline pumps. It ends the inclination to dodge the job of lubricating a car, and consequently it means bigger and adequate consumption of lubricating oil.

The Auto Table is ideal for repairing, crank case draining, oiling, greasing, and inspection. It cuts time down greatly and pays for itself in a short time.

Notice the winch for pulling the car up on the Table when it is not under power; the jacks for lifting it into any position; the handy chair for the use of the mechanic. The Auto Table is the simplest device of its kind, and has been proven the most practical.

Write us today for full information

BE SURE TO SEE OUR EXHIBITS AT THE NEW YORK (Jan. 6-13) and CHICAGO AUTOMOBILE SHOWS (Jan. 27-Feb. 3)

THE AUTO TABLE COMPANY, Inc.

Richmond Hill, N. Y.

"Move To Lay It On The Table"

Three Men Mentioned As Possible N.P.M.A. Directors

CHICAGO, Dec. 30.—In a recent letter to the directors of the National Petroleum Marketers Association, President L. V. Nicholas suggested three men for places on the board. Each of the names had been suggested to him by association members in their respective parts of country. Three vacancies will be filled at the January meeting of the directorate.

The jobbers are: W. O. Hudson, president of the Marine Oil Co., New Orleans, La.; J. H. Smitha, general manager of the Community Oil Co., Atlanta, Ga., now active in the control of the Reed Oil Corp. there; and J. L. Murray, president of the Corn Belt Oil Co., Bloomington, Ill.

As far as possible it is the policy of the association to make the directorate representative of marketing districts. With a board of 30 directors it has been possible to keep the whole country represented. The directors who resigned, are: G. T. Wofford, Wofford Oil Co, Birmingham, Ala.; G. I. Sweney, Sweney Gasoline & Oil Co., Peoria, Ill., and R. N. Reed, Reed Oil Co., Atlanta Ga. Mr. Reed recently retired from active business.

Missouri Jobbers Advocate Handling Premium Gasoline

Staff Special

KANSAS, CITY, Dec. 29.—Adoption of a resolution that all Independent oil jobbers should handle a premium priced gasoline (not exclusively but universally) was the outstanding incident at the annual meeting of the Missouri Oil Men's Association at Excelsior Springs, Dec. 15. The Missouri Independents are not in favor of quitting the sale of competitive motor fuel of course. But those present at the meeting went on record as considering it to be good business to handle two grades of gasoline at every station, the superior brand having a quality of not lower than 64 degrees straight run and having an end point not higher than 400.

Pushing a high-grade commodity of this character would not interfere with their maintaining the prevailing price level on the competitive gasoline—whether it were Navy or 56-58. The better goods would be of such a superior quality that it would justify the collection of 6 or 7 cents a gallon premium over the competitive product, it was contended. A copy of the resolution adopted was forwarded to every Independent marketer in Missouri whether he is a member of the organization or not. Unlike most similar associations, the Missouri organization has membership outside the state.

All officers were re-elected. They are: H. G. James, editor of the Petroleum Refiner, Kansas City, president; O. L. Ackert, Pierce Oil Corp., St. Louis, vice-president; A. A. Smith, Monark Gasoline & Oil Co., Kansas City, secretary, and E. L. Martin, Kansas City Refining Sales Co., Kansas City, treasurer.

Decision that the state association needs the services of a paid secretary was reached. The duties of the office of secretary are too heavy for one man to conduct in connection with his own business and too important to be neglected. The choice of a secretary and the establishment of his office were left to the executive committee. A special meeting of the executive committee will be held before the first of the year. The members present underwrote an expense of $500 a month for the maintenance of such an office.

The next session probably will not be held at Excelsior Springs. Certain matters of legislation pending in Missouri are of special interest to the oil jobbers and in order to be at the right place at the right time in mass, it was tentatively agreed to assemble in the capital, Jefferson City, for the spring meeting. The date has not been determined.

Club After New Members

KANSAS CITY, Jan. 2.—With the new year, the Oil Men's Club of Kansas City is putting on a membership drive that is expected largely to increase its enrollment. Ben Bush, Diamond Refining Co., is president of the club, Joe Walsh, Mutual Oil Co. vice president and Charles Marsh, Petroleum Refiner, secretary.

The club maintains headquarters at 126 Baltimore hotel and has recently taken additional space. Every Monday there is a club luncheon in the Doric room of the Baltimore at which talks by various speakers are given.

Open house is kept for visiting oil men at the club headquarters and members of the fraternity have a standing invitation whenver they are in the city on Monday, to attend the luncheon.

Just now the club is plugging to have the spring meeting of the National Petroleum Marketers Association and the next annual meeting of the American Petroleum Institute held in Kansas City.

Oppose Gasoline Tax

WATERLOO, Dec. 30.—The Iowa Independent Oil Men's Association met in the Russell-Lamson hotel here Friday to discuss the proposed road tax on gasoline to build roads. The jobbers went on record as opposed to the measure because it was a special tax, and favoring the building of roads by any means that did not involve the creation of a number of political jobs and involve unnecessary expense to the state in carrying out the provisions of the enactment.

President L. V. Nicholas of the National Petroleum Marketers Association presented the features of the Independents' national advertising campaign to the Iowa jobbers who showed remarkable interest in it. Mr. Nicholas enlisted several of the major Independents of the state in the movement while he was here.

Correction

PITTSBURGH, Jan. 2.—Samuel J. Black, president of the Penn-Okla Oil Corp., today said his company would not be represented in Oklahoma by the Official Refining & Gasoline Co. as buying agent. He said there must have been an error in the recent announcement at Tulsa that such an arrangement had been made.

Champlin Buys Extensive Oklahoma Station System

ENID, Dec. 30.—Purchase of the station system of the Good Will Oil Co. in Oklahoma was announced here today by H. H. Champlin, president of the Champlin Refining Co. The system includes 12 filling stations with bulk storage facilities in western and central Oklahoma.

In the same transaction leases held by the Good Will on 13 filling stations owned by Champlin were cancelled and returned to the refining company for operation. The company is building a new station at Garber and plans to increase the scope of its distributing system further.

Expansion of the Champlin refinery is being provided by the installation of five new 1000 barrel crude stills. Under the present construction program the plant will have a capacity of 20,000 barrels per day by spring. It will thus be one of the largest plants in the Mid-Continent field.

On Jan. 1, 1922, the plant had a capacity of 6000 barrels per day. Since that time construction work has been in progress virtually every day. An eight-inch crude line has been laid from Enid to the Tonkawa field during the year. Work is being completed now on the erection of five storage tanks of 55,000 barrels capacity and five of 80,000 barrels capacity.

Mr. Champlin stated today that he does not plan to erect another refinery at Perry.

Jobbers Own Lub Plant

PIPESTONE, MINN., Jan. 2.—The Northwestern Independent Oil Men's Association has been organized here as a cooperative enterprise for the compounding and manufacturing lubricating oils and greases, according to C. Howard Williams, secretary and manager of the plant. Mr. Williams states that the cooperative manufacturing and compounding will save the jobber memer from $5 to $10 a barrel on his products. The membership of the organization at present includes jobbers in Minnesota, North and South Dakota, and Montana. The product of the cooperative plant is sold under the brand name "Nioma", this being the initial letters of the name of the organization.

A jobber to become a member must own one share of the organization's stock at $500 a share. Besides Mr. Williams, the officers of the association are:

Isaac P. Tieszen, president; C. C. Wagner, vice president; H. D. Crawford, treasurer. The directorate consists of the officers and R. A. Wilkins of the Mutual Tank Line Co.

Okla. Jobbers Meet Jan. 25

OKLAHOMA CITY, Dec. 28.—The Oklahoma Oil Jobbers Association will convene in the Huckins hotel here at 10 a. m. Jan. 25, for the annual election of officers and members of the board of control which in turn will select a successor to J. T. Edwards, who has resigned to enter business.

L. V. Nicholas, president of the National Petroleum Marketers Association, will speak about the advertising campaign of the Independent oil men. A representative of the National Petroleum Mutual Fire Insurance Co. also will address the meeting. The road tax of 1 cent a gallon on gasoline in Oklahoma will be discussed.

Evaporation Of Straight-Run Gasoline In Bare And Insulated Storage Tanks

By John H. Wiggins

THE question as to whether it would pay an oil company storing gasoline in quanity to insulate its tanks has often been discussed in oil circles. An actual experiment was conducted some time ago to bring this out. Mr. Wiggins, formerly with the Bureau of Mines, now writing exclusively for National Petroleum News, gives an account and the results of this experiment in his general discussion of evaporation losses. This article takes up straight-run gasoline. A later one will discuss the results when compression natural gasoline was stored.—Editor

THE Bigheart Refining Company and the Johns-Manville Co. conducted the following test: It was made to show the difference in evaporation loss from bare and insulated tanks when storing straight run gasoline having a gravity of 63 Be. This test will bring out some of the reasons why savings by insulation may not be very great when storing comparatively low vapor pressure liquids in practically tight tanks.

Two 3000-gallon horizontal, riveted tanks were used, these being placed side by side and exposed to the sun. The bare tank was painted white; the insulated tank was covered with two inches of hair felt, waterproofed. The tanks were tight everywhere except for one small restricted vent three inches in diameter and about eight inches high at one end of the tank. The tanks were filled simultaneously during the afternoon of a very hot day, the gasoline coming from a storage tank exposed to the sun wherein the temperature was about 90 F.

Neither of these tanks lost much gasoline for the following reasons: (1) small surface exposed, (2) small volume of air and vapor above gasoline to breathe (40 cu. ft.), (3) Most of the very volatil gasoline fractions had already evaporated from the crude in the lease and pipe line tanks, (4) tanks sheltered from the wind, (5) the tanks were tight with a restricted vent. Regarding reason 4, constant changes of wind velocities will cause change of pressure in the tank through the open vent. These pressure changes would cause a small but constant "breathing" if a tank were out in the open. Therefore 4 is important.

Distillation Record of Straight-Run Gasoline

First Drop Pct. Dist.	95°F. °F.	35°C. °C.	°B.	Sp. Gr.
0.5	112	44.4	86.2	.6476
1.0	120	48.9	85.6	.6494
3.0	128	53.3	84.0	.6542
5.0	131	55.0	82.4	.6591
10.0	138	58.9	79.0	.6699
15.0	154	67.8	75.7	.6806

The accompanying table shows the distillation record of the gasoline to the 15 per cent point. Distillation was not carried further because the lightest part of the gasoline is the fraction that evaporates first. The initial boiling point is 95 F. and, by the time one-half of one per cent has been taken off, the boiling point is as high as 110 F. The above represented the temperatures of the vapor going out the top of the fractionating column. The temperature of the gasoline was from 15 degrees to 40 degrees higher at these stages of distillation. This is pointed out to show that, even though the temperature of the gasoline in the bare tank might rise as high as 100 F., still very little vapor would escape from the gasoline into a saturated gas medium, since the vapor pressure of the liquid is less than atmospheric pressure at those temperatures. Thus, if a tank containing this gasoline were tight, even though a temperature of 100 F. be reached, there should be practically no evaporation

Figure 1—shows the losses and temperature conditions of the test in condensed form. A discussion of this figure is believed necessary because some apparently contradictory results are shown. The first noticeable feature is that the average temperature of the gasoline in the insulated tank is 10 to 15 degrees Fahrenheit higher than the average temperature of the gasoline in the bare tank. As the filling was carried out on a summer afternoon, the temperature of the gasoline in both tanks at the end of the operation was about 90 F.

If the temperature of the gasoline alone is considered, the insulation caused results that are not desirable, since it kept the gasoline warm during a cool night. Ninety degrees Fahrenheit being so far above the average atmospheric temperature (70 to 75 F.), the gasoline in the bare tank started to cool the first night. It did not reach average atmospheric temperature within 3 to 5 degrees, because the white metal absorbed enough heat while the sun shone upon it to keep the gasoline this much hotter. The vapor in the bare tank rose as high as 123 F. during the hottest part of the day, whereas the maximum temperature of the vapor in the insulated tank was 90 to 93 F.

Thus for a short period of each day, the surface of the gasoline in the bare tank reached very high temperatures. The bare tank also breathes more air in and out during 24 hours. This, in combination with high surface temperature, may account for a greater loss in the bare tank than in the insulated one, even though the average temperature of the gasoline in the latter were higher.

The point for emphasis in this test is that the loss from both of these tanks was very low, only 13 gallons in 13 days from the bare tank. It can be seen that under conditions of storage such as these that it would take insulation a long time to pay for itself.

This test shows a very great contrast to the results from a test made on the weathering of compression natural-gas gasoline. The weathering test showed a great volumetric saving by the insulated tanks because the vapor pressure of the compression gasoline at the temperature of storage was much above atmospheric pressure. The straight run gasoline used in this latter test was 63 Be. gravity, a very high-grade marketable product. Nevertheless, it could be very safely stored in full bare tank that was tight at the average temperature of 90 F. with little loss.

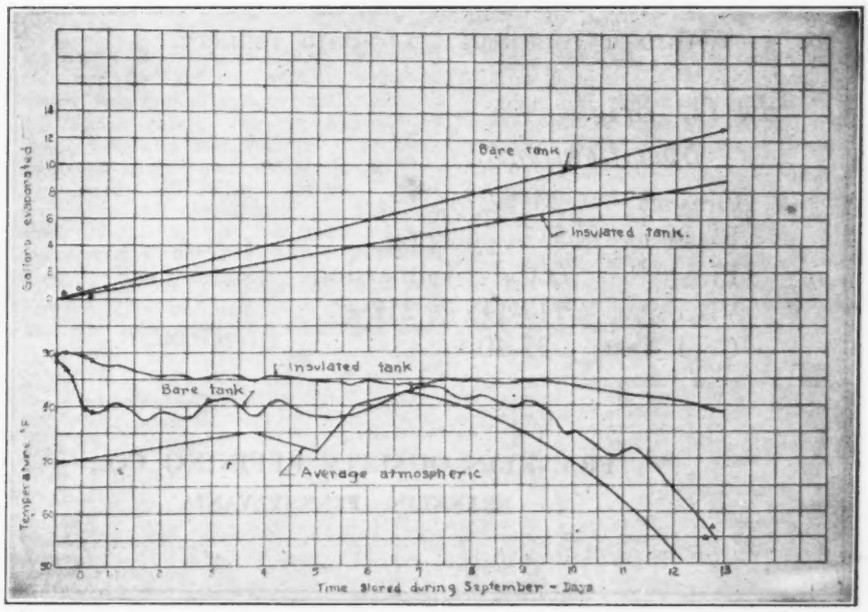


Figure 1-Results of insulation test on Straight run gasoline.

High Grade Butler County Crude

This is the raw material from which DERBY GASOLINE (better than New Navy) is made. We handle from the well to you.

It is a gasoline from which all injurious compounds have been thoroughly removed.

Made for cold weather use.

Let us make your next shipment.

Kerosene, 38-40 Straw.
Distillate, Fuel Oil.

You will like our merchandise and our service.

The Derby Oil Company

FRANKLIN QUALITY
Bright Stock,
Motor Oils (*any specification*)

and all products manufactured from PURE PENNSYLVANIA CRUDE thru a complete up-to-date refinery.

F. Q. Bright Specifications:

Gravity	26½-27½	
Flash	535 Total	*Inquiries Solicited and Samples furnished*
Fire	600 Immersion	
Viscosity	140-145 @ 212	
Cold Test	35-40	

FRANKLIN QUALITY REFINING CO.,
FRANKLIN, PENNSYLVANIA

Tulsa Purchasing Agents Gain Eight New Members

Staff Special

TULSA, Dec. 28.—The Tulsa Purchasing Agents Association reports the acquisition of eight new members during the past two months, since President J. W. Shields, of the Oklahoma Producing & Refining Corp., has been in office. These new members are:

C. A. McNamara, purchasing agent for the Sinclair Oil & Gas Co.; Robert G. Martin, purchasing agent for Shaffer Oil & Refining Co.; G. A. McCulley, purchasing agent for the Oklahoma Steel Castings Co.; A. F. Bourne, secretary, treasurer and purchasing agent for the Oklahoma Iron Works; H. A. Gump, purchasing agent for the Oklahoma Natural Gas Co., Bob Bradshaw, secretary-treasurer and purchasing agent for D. D. Wertzberger Co., rig contractors; C. S. Price, purchasing agent for the Diamond Refining Co. and A. L. Rizan, purchasing agent for Constantin Refining Co., all of Tulsa.

* * *

TULSA, Dec. 28.—Members of the Tulsa Purchasing Agents association and wives and friends enjoyed a week-end New Year's party in the Ozark region of Missouri. O. V. Borden, secretary of the association, preceded the main body, and rented the hotel at Ginger Blue, Lanagan, Mo., one of the many resorts along the Cowskin river. The trip was made in autos, the present clement weather conditions making the six-hour drive a pleasure. Among those who were present with their wives are: O. V. Borden, Fred Robertson, Skelly Oil Co., O. N. MacCurdy, Kansas & Gulf Co., R. D. Gwynne, Gypsy Oil Co., J. W. Shields, O. P. & R. Corp., N. M. Franklin, Whitaker Tire Co., R. L. Stevenson, Highway Freighters, D. P. Sands, Manhattan Rubber Manufacturing Co.

Holiday Season Causes Supply Trade Inactivity

HOUSTON, Dec. 30.—The holiday season has served to prolong the inactivity of the past two weeks in the supply trade market. There has been a general slump in orders; and no new inquiries have been reported.

Prices remain unchanged while shipping conditions continue to improve slightly. Deliveries are nearly normal at present in this district.

Tubular goods continue to move into the Smackover field, in lesser quantities, however. The recent shortage has been almost entirely relieved.

* * *

HOUSTON, Dec. 30.—G. S. Richmond, field representative of the Continental Supply Co., is in McAllen, Tex., inspecting the drilling operations of the Dayle L. Smith Oil Co. This concern is wildcatting about 20 miles southwest of McAllen.

PITTSBURGH, Dec. 30.—I. A. Bickelhaupt, advertising manager of the Pittsburgh-Des Moines Steel Co., is moving temporarily to Richmond, Va., to open and organize a sales and construction office for this company. He is succeeded in the Pittsburgh office as advertising manager by Joseph S. Harrison.

Reds Steal Refinery, Seek To Compete With Victim

CLEVELAND, DEC. 28

HOW Government of the Russian soviet republic confiscates the industrial enterprises of citizens of other countries and then uses them for its own enrichment, even trying to meet its victim's competition in foreign markets, or propaganda purposes is shown by an exhibit of lubricating oils at the fair at Koenigsberg, Germany, several months ago.

The accompanying picture is of the Russian soviet oil exhibit and was sent to **National Petroleum News** by President Edward Prizer of the Vacuum Oil Co. which is one of the worst sufferers among foreign enterprises at the hands of the Bolshevist government. Mr. Prizer commenting on the confiscation of foreign property and investments, wrote:

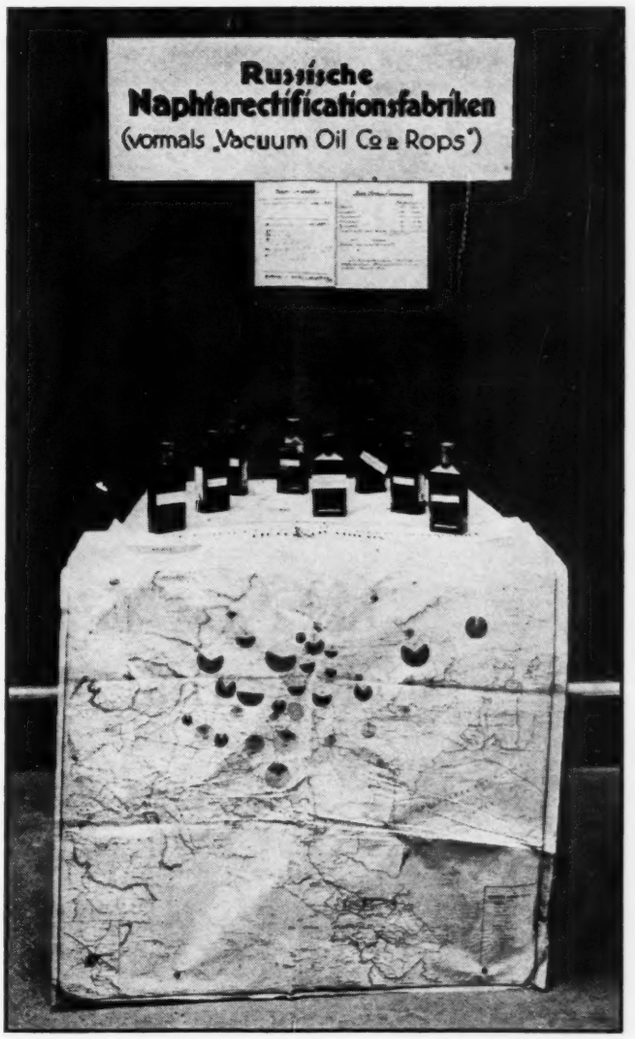
"A free English translation of the sign over the exhibit would be 'Russian Petroleum Co., formerly Vacuum Oil Co. and Ropes'. The significance of the exhibit was the implication that the oil shown in the bottles was manufactured at the plants in question and could be sold to buyers in Germany.

"The Russian Vacuum Oil Co., which was financed exclusively by the Vacuum Oil Co., New York, operated a refinery at Petrograd. The firm of Ropes did the same. At the time of the confiscation the entire property of both companies was taken over bodily. Our company's loss, representing capital that we had invested in our Russian operations, ran very close to $3,500,000.

"Now the soviet company has the gall to go into Germany where the Deutsche Oel A. G. has in operation two refineries financed originally by capital supplied by the Vacuum Oil Co., New York, and claim to be able to supply Vacuum products made in the plant which we formerly owned in Russia through our Russian company.

"It is quite unlikely that the soviet company is in any position to operate the former Vacuum refinery at Petrograd, because the men who were employed originally and who possessed the necessary skill, were driven out of Russia at the time, or prior to the actual confiscation. It may be, therefore, that this display is as much for propaganda purposes as for commercial effort. However, to steal our property is bad enough, but to go into markets outside of Russia and make an attempt to trade on our company's name and reputation is certainly rubbing it in."

Mr. Prizer also reports that his company has received indirect proposals from the soviet republic to lease its property at a rental price. Mr. Prizer, however, advises against anyone permitting themselves to be persuaded to invest money in Russia as they are likely to lose every cent of it.



Russian oil exhibit at the Koenigsberg, Germany, industrial exhibit. The photograph was slightly damaged in transit from Germany.

Output And Stocks Of Refined Products Gain In Mid-Continent During October

TULSA, Dec. 27.—Stocks of all principal refined products with the exception of lubricating oils increased at Oklahoma and Kansas refineries during October, according to statistics just issued by the Bureau of Mines.

The increase in reserve stocks in the two states did not result from a lessened consumption but rather because of a sharp increase in production. From a daily average of 232,236 barrels in September, refineries in the two states increased their crude runs to 240,193 barrels per day. The increase of 7957 barrels per day was equal to 3.4 per cent of the September runs.

Sales of gasoline in October reached a total of 102,863,751 gallons, an increase of more than five million gallons over September when consumption was 97,667,187 gallons. Kerosene was the only major commodity produced by refineries in the two states to experience a slackening in demand. Sales for October were 29,149,792 gallons as compared with sales totaling nearly 32 million gallons in September. Gas and fuel oil consumption increased nearly two million gallons in October, to 129,236,532 gallons but the increase in production was sufficient to more than meet the larger sales and stocks on Oct. 31, were 120,670,145 gallons. That amount is still considerably less than the stock of gasoline and represents a much lower reserve than is usually maintained.

For a number of months Oklahoma and Kansas refineries have been runing less and less lubricating oils while they have been depleting their stocks. October, with its lower prices on fuel oil caused by the Smackover situation, saw a number of plants returning to the operation of their lub sections and production increased by around 8,000 gallons per day. Despite that fact, sales increased nearly a million gallons to 8,407,608 gallons which required the withdrawal of nearly two million gallons from storage and reduced stocks to 11,803,287 gallons at the end of the month.

Oklahoma and Kansas refinery stocks of gasoline represent a new high figure for the month of October and come within a few million gallons of reaching the peak of last spring. Stocks on Oct. 31 were 128,493,078 gallons an increase of 9.1 per cent. over Sept. 30.

	September	October	Daily Av. Increase	Percentof Increase
Crude and Rerun Oils, Bbl	232,236	240,193	7,957	3.4
Gasoline, Gal	3,411,288	3,664,064	252,776	7.4
Kerosene, Gal	999,281	1,043,739	44,458	4.4
Gas and Fuel Oil, Gal	3,906,743	4,263,121	356,378	9.1
Lubricating Oils, Gal	207,975	215,949	7,974	3.8

	Sept. 30	Oct. 31	Percent of Change	Total Sales for Oct.
Gasoline, Gal	117,770,831	128,493,078	+ 9.1	102,863,751
Kerosene, Gal	31,961,693	35,167,820	+10.2	29,149,792
Gas and Fuel Oil, Gal	117,749,920	120,670,145	+ 2.4	129,236,532
Lubricating Oils, Gal	13,516,461	11,803,287	−14.2	8,407,608

Be a "Now" Man-

Let New Year's Day be an alarm clock that rings the message of

"go get orders"

The Oil Business *Needs* You!

Canfield Oil Co.
QUALITY & EXPERIENCE SINCE 1886

Here And There

New York, Dec. 28

J. E. GERRODETTE, formerly with the C. L. Maguire Petroleum Co., has organized and incorporated J. E. Gerrodette & Co. to do a general marketing business in petroleum products. The Maguire company has closed its New York offices and these at 17 Battery place are occupied by the new company. With Mr. Gerrodette are associated Henry J. Hall, Jr., formerly vice president and general manager of the New York Lubricating Oil Co., and E. B. Bruard, formerly with the Anglo-American Oil Co. Ltd.

* * *

Hillyard, Wash., Dec. 28.—Roy Finch, manager of the Central Garage at Hillyard, has installed a 20,000-gallon tank for gasoline and is now running a tank truck, having received his first shipment of two cars of gasoline. He will market under the brand "Radio".

* * *

Spokane, Wash., Dec. 29.—The Wesco Oil Co. of Spokane, which is the marketing organization in this district for W. H. Barber Co. of Minneapolis, has bought the plant formerly operated by the Superior Gas & Oil Co. and are now marketing gasoline under the brand "Fyre-Drop."

James K. Helmar who with L. A. Greene is in charge of the Fort Worth office of the Fred G. Clark Co., Cleveland.

Bolivar, Mo., Dec. 29.—The Superior Oil Co. of Bolivar has opened a bulk station at Weaubleau, Mo., which has two 15,000-gallon tanks. Two tank trucks are being operated at the new station.

* * *

Albany, N. Y., Dec. 29.—The Inter-Ocean Petroleum Products Co., 472 Madison Avenue, Albany, recently sold the first barge load of Independent fuel oil shipped up the Hudson river. The cargo amounted to 140,000 gallons and was unloaded at Athens, N. Y. The Inter-Ocean company is the successor to the Checker Filling Stations and the officers are: T. B. Wagner, president; A. R. Wally, secretary, and Harwood G. Lawton, treasurer. It has a bulk plant here and four service stations in Albany and Troy where it bought out the Trojan Oil & Gasoline Co. Nov. 1. Mr. Wagner is general manager of the company; Mr. Wally manages the Troy branch, and Mr. Lawton is in charge of the Albany stations and retail sales.

* * *

Roswell, N. M., Dec. 29.—Levers Bros., a firm formed last April by F. E. and R. E. Levers, have been made agents here for The Texas Co. The firm has a bulk station and two drive-in service stations in Roswell and in the near future expects to start building two stations in towns near Roswell. The firm, managed by F. E. Levers, also handles tires and accessories.

* * *

Baltimore, Dec. 28.—The Refiners Export Oil Co. was recently organized here to do a general export business but will specialize in gasoline, kerosene and lubricating oils. It has a plant with 180,000 barrels' capacity at Marrero, La., across the river from New Orelans. L. K. Harper, vice president, says the plant is equipped completely to handle the three products.

* * *

Ash Grove, Mo., Dec. 30.—The Ash Grove Oil Co. is preparing to build a bulk station at Golden City, Mo. Merle S. Cross, son of Manager T. S. Cross, will be in charge. The younger Mr. Cross recently was married. The elder Mr. Cross reports that business has been good up until the last few days when weather became favorable.

* * *

Spokane, Wash., Dec. 28.—The Bankers Petroleum Co., 323 Symonds block, Spokane, expects to install more bulk stations in the spring at places yet to be selected. This company does not operate in Spokane but confines its operations to the smaller towns of this territory. It also plans to increase the size of several existing stations.

* * *

Spokane, Wash., Dec. 27.— A. L. True of Trues Oil Co. Spokane, will spend January and February as a member of the state legislature. This is Mr. True's second term.

* * *

Santa Rosa, Cal., Dec. 27.— The Mercury Oil Co. of Santa Rosa intends building a bulk station at Napa, Cal. Storage for gasoline, distillate, kerosene and lubricating oils will be provided.

* * *

Boston, Dec. 27.—Walter H. Jaques is sales manager of the Masury-Young Co., importers and wholesalers of oils and greases.

* * *

San Francisco, Dec. 26.—The Quaker Oil Co. is the name of a new marketing organization recently formed here with $500,000 capital stock. It intends to market through central California and will establish bulk stations in several San Joaquin valley towns. Officers of the company are: A. R. Griffith, president; F. E. Rutherford, vice president, and Paul S. Marrin, secretary and treasurer. These with C. E. Skaggs and C. F. Chambers form the directorate. The offices are at 1121 Balfour building, San Francisco.

* * *

Joplin, Mo., Dec. 26.—The Joplin Oil Co. has added 64-66 straight run gasoline to its line.

* * *

Joplin, Mo., Dec. 27.—The Crew-Levick Co. is putting in a bulk station here.

L. A. Greene who with James K. Helmar is in charge of the Fort Worth office of the Fred G. Clark Co., Cleveland.

Grand Rapids, Mich., Dec. 29.—Mr. and Mrs. Raye E. Backart, 1025 Madison avenue, S. E., are receiving congratulations on the birth of a daughter, Dec. 10. Mr. Backart is office manager of the Sun Oil Co. of Grand Rapids.

* * *

Detroit, Dec. 29.—The Detroit division of the Sinclair Refining Co. has announced the following changes in personnel effective this month:

P. L. Hassett, assistant division manager, in addition to his present work will assume the bulk sales work in Michigan and the East in place of E. P. Shipley who has been drafted by the Chicago office to open a new bulk sales territory in the West.

V. E. Marshall, special representative in Ohio, has been made assistant division manager. He will be succeeded in Ohio by H. A. Rheiner, who has been salesman for Western Ohio. L. J. Spillane, city salesman at Toledo, takes the place made vacant by Mr. Rheiner's promotion.

W. S. Martin, agent at Rochester, N. Y., has been made salesman in important eastern Ohio station territory, in place of W. A. Moran, who resigned. P. R. Klem, salesman at Rochester, has been made agent.

J. P. Spencer, truck driver at Akron, O., has been made agent at Elyria, O., succeeding C. A. Lapp, who resigned.

R. H. DuBois, assistant C and E superintendent, has been made assistant to the division manager.

W. H. Hunt, agent at Niagara Falls, has been made general agent at Buffalo, replacing V. E. Tyler, who resigned. W. K. Weir, salesman at Buffalo, has been promoted to the Niagara Falls agency.

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THE M. W. KELLOGG COMPANY
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Kellogg Forge Welded
High Pressure Stills

Fire, Tube, Steam And Vacuum Stills; Specifications, Efficiencies

By H. S. Bell
M. W. KELLOGG CO., NEW YORK

The accompanying article is made up from advance excerpts of Mr. Bell's book, "American Petroleum Refining," which is now on the press. The book will cover the various phases of the refining business. The publisher is D. Van Nostrand Co., 6 Warren street, New York City.

IN other than the tube stills, the principal factors which control the rate of distillation are:

The evaporating surface;
The heating surface;
The area of the vapor outlet.

The evaporating surface, for the usual type of horizontal cylindrical still, may be taken as 2/3 of the diameter multiplied by the length, when the still is operated on the batch principle. The factor 2/3 will allow for reduction in area of the evaporating surface as the oil level drops in the still. An analysis of the records of many still runs shows the amount distilled or "taken overhead" to vary between 1.27 and 1.71 gallons per hour per square foot of evaporating surface, with the average at 1.50.

This figure allows 6 per cent of idle time for charging, pumping out, etc., and may therefore be used directly for estimating the operating results over an extended time or for designing new equipment. When a bettery of stills are arranged to run continuously, the above rate can be greatly increased. Records are available showing the gallons per hour per square foot of evaporating surface to be between 2.5 and 3.3. The lower figure of 2.5 is recommended for calculations involving continuous distillation. In the case of continuous stills, the oil level can be maintained near the half diameter, so that the factor of 2/3 need not be applied to the actual surface, which is simply the length times the diameter.

The heating surface must of course be ample to transfer sufficient heat to effect the distillation. In the case of continuous stills, the full half circumference is often fired. Records of such stills show that 2.5 gallons of distillate per hour per square foot of heating surface may be depended upon. With batch stills, the area of bottom exposed to the furnace gases is usually reduced, to avoid the possible exposure of a portion of the bottom to the action of the flue gases on one side without any oil to conduct the heat away on the other. This condition would arise as the oil level dropped, unless the protecting walls of the setting were drawn in toward the still center. Usually one third of the circumference is exposed to the heating medium under such conditions. In this case, however, the rate of evaporation is slower than with the continuous system, so that the amount of distillate is not limited by the area of heating surface, provided that the still is exposed to the furnace gases for its entire length, excepting only for the front and rear furnace walls.

The area of the vapor pipe must be sufficient to permit free and unrestricted passage of the oil vapors and free steam (if used), to the condensers, at a rate sufficiently high to accommodate the full still capacity as determined by the preceding factors. From observation of stills of various dimensions with various areas of vapor outlets, a standard of not less than 0.17 square inches for each gallon of overhead distillate per hour is suggested. This area will be sufficient to carry away oil vapors and steam without objectionable back pressure at the rates previously given.

Horizontal Cylindrical Stills Dimensions And Capacities

Charging Capacity, 42 Gal. Barrels	Total Capacity, 42 Gal. Barrels	Dia., Feet	Length, Feet	Vapor Pipe Dia., In.	Evaporating Surface, Sq. Feet	Gals. of Distillate per Hr., at 1.5 per Sq. Ft.	Gals. of Distillate per Hr., at 2.3 per Sq. Ft.	Estimated Weight, Lb.
180	214	8	24	8	128	192	294	16,800
350	416	10	30	10	200	300	460	24,600
615	725	12	36	12	288	432	662	41,800
1,000	1,150	14	42	14	392	588	902	56,000
1,200	1,416	15	45	15	450	675	1,035	65,700

Generally speaking, the horizontal cylindrical stills most in favor have a length of approximately three times the diameter. The vapor outlet is generally placed from half to two-thirds the distance from the fire box end to the rear.

Based on the preceding discussion, the accompanying table of horizontal cylindrical still dimensions and capacities is offered.

Specifications for the construction of stills of this type should be drawn to suit the service in which they will be used. * * * * The bottom is of steel of "fire box" or "still bottom" quality. The caulking edges of the bottom plates are kept away from the furnace gases. This is most important. The thickness of the bottom plates is usually ½ inch. It is well established that the thinner plates lead to higher maintenance costs, because when heated they will bag and buckle quicker and burn out sooner. On the other hand, thicknesses over ½ inch for ordinary still bottoms are not recommended, on account of higher first cost and increased difficulty of patching. For very severe service, as in stills running down to coke, 5/8 inch bottoms have proved economical. For stills up to and including 10 feet diameter, 3/8 inch flange steel for side and top plates is satisfactory. Larger stills should have ½ inch shell plates throughout. * * * *

A type of apparatus for distillation which is attracting attention today is the tube or pipe still. Originally designed for dehydrating heavy crude oils, the low cost and high efficiency have led to further developments until it is now used for a great variety of work. The modern tube still consists of a continuous coil of pipe set in a chamber for the application of heat. The coil discharges into a chamber of considerable volume termed the separator. Here the vapors evolved during heating are released and led to condensers of various types. Fig 30 is diagrammatic of a typical tube still. It is obvious that the vapors leaving the separator are composed of several of the "cuts" possible on an ordinary still. To effect separation into final products, fractional condensation must be resorted to. It is difficult to obtain close cuts by condensation, and some criticism has been directed at the tube stills for this reason. The fuel efficiency (as later discussed),

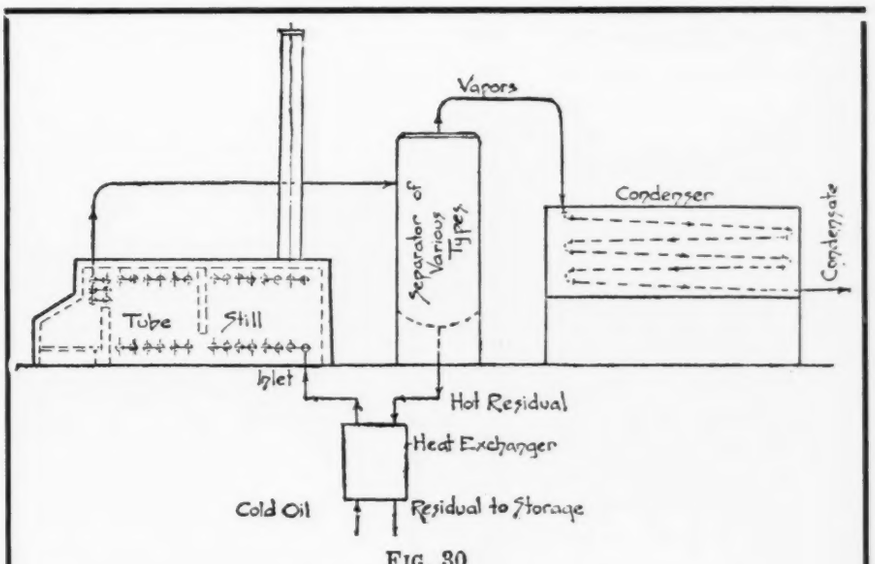

FIG. 30

Diagram of tube or pipe still.

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cost and labor requirement are all favorable, and for topping service this type of still is admirable. Some refiners take off further cuts, such as kerosene and gas oil, with this apparatus, and express satisfaction.

One of the troubles with earlier designs was a deposit of carbon on the interior of the tubes, resulting in overheating of the tube walls, and sometimes in rupture. It is now generally conceded that a high tube velocity will eliminate this trouble and carry the carbon, suspended in the oil, into the separator; to be removed with the residual. This velocity should not be less than 3.8 feet per second. As the coil is continuous, the pipe size is in itself a deciding factor in the throughput. At the velocity above given, the recommended capacities of tube still units in barrels of throughput per day are as follows:

2-inch— 1,200;
3-inch— 2,700
4-inch— 5,000;
6-inch—10,500

With the capacity fixed by the pipe diameter, the amount of distillate possible to take off "overhead" will depend upon the heating surface and therefore upon the length of coil exposed to furnace gases. Best results, as far as maintenance is concerned, are obtained with moderate combustion chamber temperatures, of about 1500 degrees F.

The separator may be horizontal or vertical, but must have ample capacity to permit a free escape of vapors. From 2½ to 3 cubic feet per barrel of overhead distillate per day should be allowed. The vapor outlet from the separator should have an area of not less than 0.13 square inch for each barrel of overhead distillate per day.

Tube still practice is generally open to all. The best known patented apparatus of this type is that of the Trumble process.

A third method of running steam stills is the so-called "semi-continuous." No baffles are needed. The still is partly charged and heated, and distillation started. More stock is fed in continuously to make up for the portion distilled off, until the accumulated "bottom" or residual in the still has reached proportions to justify shutting down and pumping out. This method affords opportunity to utilize a vapor heat exchanger and a scrubbing tower, if desired, with consequent economy.

Steam still settings are very simple. Brick cross piers or structural steel frames are often used alone. To carry the tower and vapor heat exchangers, dividing walls of brick or concrete are sometimes used between stills.

Vacuum stills may follow the general plate arrangement of the fire stills previously discussed. They are, however, usually smaller in diameter and longer for a given capacity than the fire stills. Heavy bracing is necessary to avoid collapse, under the high bottom temperatures. Double angle irons curved to the shell and riveted inside at about 5-foot centers are sufficient for the American wet vacuum system, for stills up to 10 feet in diameter.

In using the dry vacuum system with its possible high vacuums, the bracing should receive further attention. The heads are often made flat to enable I-beam stiffeners to be riveted on.

The fuel consumption necessary to distill oils is difficult of determination on account of variations in the latent and specific heats at various stages of the process. The most careful determination for one oil or stock cannot be used for another. In running to coke, estimates of 2500 to 3000 B.t.u. per gallon have been advanced. Part of the variation is no doubt due to differences in gravity. A chart may be constructed with the following assumed factors, if the distillation test is available:

Specific heat	0.5
Latent heat, gasoline	130 B.t.u.
Latent heat, naptha	125 B.t.u.
Latent heat, kerosene	120 B.t.u.
Latent heat, gas oil	115 B.t.u.
Latent heat, wax distillate	110 B.t.u.

Such a chart is shown in Fig. 41 for a crude oil of 37 degrees Be. While based on values subject to variation, it

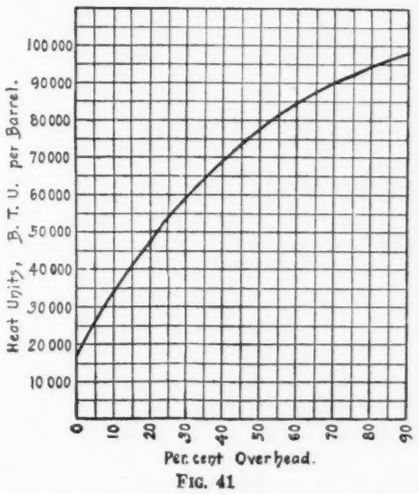

FIG. 41

nevertheless shows roughly the relation between the heat units required for distillation and the percentage of oil distilled from the original charge.

The efficiency of the average oil still setting is notoriously poor. Several reasons contribute to this, the most important being the high temperature of the escaping flue gases. Compared with average boiler practice, these temperatures are very high; and must necessarily be so, since the temperature of the oil in the stills is also high, ranging from 500 degrees to 700 degrees F. at the end of a run. Better baffling and better attention to the amount of excess air will help to some extent; but without some supplementary method of reclaiming the heat in the spent flue gases, it is impossible to reduce this heat loss below 25 to 30 per cent of the heat evolved in the furnace.

In the case of continuous stills, vapor and residual heat exchange improves the efficiency.

There is some difference of opinion as to the advantage of mechanical stokers. Some refiners, after tests, claim that there is little saving on batch stills, on account of the different rates of firing during the run. Others favor the stokers. There can be little question of their efficiency under batteries of continuous stills, where each still is running with a practically constant coal consumption. The labor saving is also a strong argument for the stokers, but this has no bearing on fuel efficiency.

Tube stills, on account of the counterflow between oil and flue gases, show a much higher efficiency. The flue gases in this type of apparatus may be reduced in temperature to within 150 degrees or 200 degrees F. above the entering oil temperature.

Reclaiming Waste Heat

Various methods may be adopted to reclaim the waste heat in flue gases and thus to improve the overall still battery efficiency. Waste heat boilers, feed water economizers, waste heat steam superheaters, oil preheaters and preheaters for air fed to the combustion chamber, have all

Tabulation Of Some Results From Actual Practice

Oil	Per Cent. Over	Lbs. Coal per Bbl.	B.T.U. per Lb. of Coal	Per Cent. Oil	Remarks
Crude	75	19	14,500	...	Continuous stills with elaborate vapor and residual exchangers.
Crude and Stocks	various	24 average	14,000	...	Part batch, part continuous.
Crude and Stocks	various	26 average	11,500	...	All batch, stokers under stills.
Crude	85	..	.....	4.0	Continuous: vapor heat exchanger.
Crude	24	..	.....	1.1	Continuous: topping.
Crude	21.5	..	.....	.88	Trumble stills.
Crude	18.4	..	.....	1.1	Trumble stills.
Crude	24	..	.....	1.6	Ordinary tube still.
Crude	(to coke)	36	14,000	...	Hand fired batch.
Stock	65	29	14,000	...	Batch.
Stock	97	35	14,000	...	Batch.

Still Efficiencies As Affected By Firing Methods

Kind of Still	Method of Firing	Kind of Oil Distilled	Per Cent. of Oil Distilled Overhead	Fuel: Pounds per Barrel of Oil Chgd.	Efficiency of Still and Setting, Per Cent.	Flue Gas Temperature	Remarks
Batch	chain grate stokers	Crude	40	22.0	40.3	815	Single pass regular setting
Batch	do.	Wax dist.	87½	30.0	36.2	870	do.
Coking	do.	Crude	to coke	41.4	28.8	945	do.
Batch	do.	do.	42	17.2	51.6	725	Precaution to reduce excess air and cross baffles to make gases sweep the still bottom
Batch	do.	Wax dist.	92.5	26.3	47.5	774	do.
Coking	do.	Crude	31.4	42.0	965	do.	
Coking	oil	do.	do.	18.9	52.4	749	....
Batch	Underfeed stoker	Wax dist.	?	24.3	48.2	845	....
Batch	do.	do.	?	19.0	61.2	890	Air for combustion preheated

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been used. Feed water economizers set in the flues are very successful and give little trouble. The possibilities of this feature will be discussed in connection with the topic of refinery power houses. It should be noted that economizers will not raise the still battery efficiency, but that the resulting savings will appear in the power costs and hence in the overall plant efficiency.

Oil or air preheaters, however, will affect the efficiency of the battery itself. The usual type of oil preheater is a tube still of ordinary design, discharging into the first of a series of continuous stills instead of to the usual separator. Such a preheater cannot be recommended for batch stills.

Waste heat boilers are rarely used on new installations, since the modern tendency is to concentrate the steam generation in a central plant.

Oil firing permits of more efficient combustion than is possible when using coal. The amount of excess air can be materially reduced.

A tabulation of some results from actual practice is shown on page 43.

The striking fact in the table is the variation in the reported fuel consumptions. Different oils and different types of apparatus account for the impossibility of constructive deductions.

The tests made by the Bureau of Mines and the Sinclair Refining Co., while confined to one general style of setting, allow conclusions to be drawn as to the effects of different conditions of firing and minor changes.

The table showing still efficiencies on page 43 is condensed from records of these tests, will be of interest.

These tests show conclusively what can be done when attention is given to the question of fuel consumption. The fuels used were coal of 10,000 and oil of 19,000 B.t.u. heat content respectively.

A chart is shown on the previous page for convenience in determining the fuel consumption of oil stills for various combined still and setting efficiencies.

The following efficiencies are recommended for use with the chart:

	(Per cent)
Best type, oil-fired tube still	65
Ordinary oil-fired tube still	55–60
Continuous oil-fired cylindrical stills with vapor and residual exchangers	50
Ordinary oil-fired continuous stills	40
Batch stills, oil-fired	30
Coal-fired continuous stills with vapor and residual exchangers	45
Ordinary coal-fired continuous stills	35
Coal-fired batch stills	25

The above values make no allowance for apparatus to reduce the heat of the flue gases, which still further improve the efficiency in each individual case. Such improved efficiency may be a direct credit to the still battery, but is more likely to appear in the overall plant efficiency and hence is here neglected.

BOSTON, Dec. 27.—The Frank L. Young Co. reports that a shortage of menhaden fish oil exists because of the small catch this year. This year's production, H. W. Young, of the company estimates, will be about 115,000 barrels, of which soapmakers will get 40,000 barrels and refiners will get about 51,000 barrels. This will leave a balance of but 36,700 barrels whereas normal requirements of pressers to be supplied from this balance run from 60,000 to 75,000 barrels a year.

DIGEST of TODAY'S OIL TECHNOLOGY

Oil-Proof Treatment Of Concrete Storage Tanks

Petroleum Times, London, October, 1922

STEEL has up to the present been considered the only suitable material for such tanks. From the standpoint of cost, however, steel compares very unfavourably with concrete. In addition, the conductivity of steel to heat, with attendant evaporation of oil in hot weather and congealing in the winter, are serious disadvantages. Concrete, if impermeable, makes an ideal material owing to its insulating properties and cheapness both in first cost and maintenance. Ordinary concrete, however, is not impermeable, and I venture to suggest that even with the greatest care in mixing, oil will permeate into and through such class of concrete, the degree of permeability depending, of course, upon the density of the concrete; but there is no concrete which is absolutely immune. It should not be forgotten that concrete used in "oil"' tanks is, as a rule, subject to pressure head, due to the depth of the tank, and this pressure intensifies the permeation of the oil. As oil is expensive, its container should be "oil tight."

Among many investigations in engineering materials I have experimented largely upon concrete for information upon various points of interest to engineers, among them being the "impermeability of concrete, particularly under pressure," as it is very seldom that we get concrete when used for tanks without tests I have taken particular care to see that the concrete is of the best, mixed and gauged properly, and at least equal—if not better —than that generally found in practice. My experiments on plain concrete showed me that considerable absorption and permeation took place, and I then cast about to find a method, if I could, which would prevent this absorption and permeation. This required a good many experiments before I found that for which I was seeking. I give the bare results of my experiments for the benefit of your numerous readers.

I used kerosene for the liquid and immersed two blocks of concrete therein for 10 days. One block was untreated (plain concrete) and the other treated with the method which I put forward as a solution of the difficulty. After immersion for 10 days the blocks were taken out and dried, and it was found that the untreated block absorbed 6 per cent of its weight, whilst the treated block showed no increase in weight. I then subjected similiar blocks in a special testing apparatus to a pressure of 30 pounds per square inch of oil.

The results were surprising to me. After one and a half minutes oil had passed through the untreated block, and after this time had elapsed it passed through very quickly. The treated block showed no sign of permeation, even after the test had been on 14 days. Both blocks were then dried and weighed. The untreated block had absorbed 7 per cent of its weight, while the treated block showed no increase. The method of treatment adopted for these excellent results consisted of reducing the porosity of the concrete and neutralizing the free lime therein by the application of a special liquid after the concrete was made and set, and afterwards applying a coat of oil-proof compound which was immune to the action of the oil. The neutralizing liquid must enter into the concrete to counteract any injurious effect of free lime present upon the oil-proof compound which was simply brushed over the surface. Without the preliminary treatment, the free lime acted upon the outer skin and formed "blobs," and hence broke the surface. The oil-proof compound will not deteriorate even in hot oil, and being elastic it is not affected by moisture or changes in temperature.

These experiments, therefore, seemed to show that to render oil tanks proof against leakage it is necessary to surface-treat them on the face next the oil after a preliminary treatment to render null and void any action from the concrete itself. The importance of these results lies in the fact that without treatment concrete tanks may show a very serious loss of oil contents. Thus, assuming we have a tank 20 feet deep and 21 feet in diameter, with walls 1 foot thick, with a 6 per cent absorption, we should lose at least 950 gallons of oil. This is serious enough, but as the concrete in the tank is under pressure, due to the head, we are likely to lose by absorption alone some 1100 gallons of oil, while this amount is very largely increased by the oil passing through the concrete itself.

Analysis Of Mixtures Of Hydrogen With The Paraffin Hydrocarbons

J. G. King, Fuel, Vol. 1, 1922, Chemical Abstracts, Nov. 10, 1922.

The analysis of mixtures of hydrogen with several paraffin members has always been difficult, since it is impossible to estimate the per cent of the gases from the results of an "explosion analysis". It is necessary to remove the hydrogen, and means for doing this are described by addition to an ordinary gas analysis apparatus. This consisted of fractional combustion over copper oxide, whereby carbon monoxide and hydrogen were consumed at a temperature at which the paraffins remain unchanged. The latter are determined in the residue in the usual way. The actual apparatus is essentially an adaptation of that of Jager (cf. J. Gasbeleuchtung 41, 764, 1898). It was found that a uniform temperature of 280 degrees should be maintained around the combustion tube and that the rest of the apparatus be protected from radiated heat.

REVIEWED BY REFINER

The purpose of this department is to place before the busy oil man a digest of the current technical literature of the industry from week to week in such form that he can keep in touch with scientific developments without taking the time to read the lengthy books, papers and reports involved.

The man conducting the department is a technologist employed by one of the large refining companies, who in course of his work keeps himself acquainted with technological lectures, reports and books as they are issued.—Editor.

Probable Mother Substance of Petroleum

R. Thiessen, Bureau of Mines, Pittsburgh, Pa.

Many scientists interested in the origin of petroleum hold that the bituminous rocks are the mother substances, so if it is assumed that these are the source of petroleum, a better knowledge thereof is of practical value. All bituminous rocks may be divided into two great classes; namely, coals and bituminous shales.

Coals.—Coal is composed of a residue of the various plant compounds, of which the cellulose and lignocelluloses contribute the larger and most important part. With these are always associated the residues of the more resistant plant components, such as resin, waxes, fats, and oils—but in a minor part.

Bituminous Shales.—Under this heading are grouped the cannel coals, boghead coals, cannel slates, kerosene shales, torbanite, and oil shales. These may be classified definitely according to the origin of their predominant components. Five classes have been recognized, namely humic shales, spore shales, coorongite shales, Kiskiminetas shales, and Green River shales.

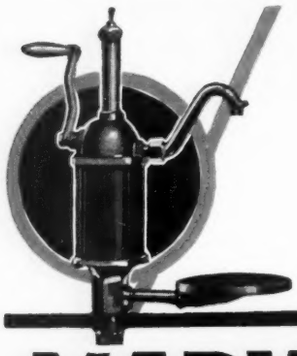
Humic Shales.—Cellulose degradation matter, or humic matter, forms the predominant component, with an admixture of resinous, spore and cuticular matter as minor constituents of the humic shales.

Spore Shales.—The predominant component of the organic matter of the spore shales is composed of spore exines of a variety of plants. Arbitrarily, they may be classified into spore-cannel coals, spore-cannel slates, and spore-oil shales according to the proportion of mineral matter present in them. To this group belong the ordinary cannel coals, cannel slates, and oil shales, which constitute the bulk of the shales.

Coorongite Shales.—These shales comprise torbanite, kerosene shales, and bogheads. These have long been described as being formed by algae. It has not been found that they were formed by an organism similar or like that living body in certain salt lakes and salt lagoons, and give rise to deposits known as coorongite. The organisms have certain characteristics of the blue-green algae, but their position is still under investigation, and is not definitely known.

Kiskiminetas Shales.—This class is best represented by a cannel coal found near Kiskiminetas Junction, also in the Pottsville formation. The origin of the predominant component is unknown.

Green River Shales.—These are found in tertiary and Cretaceous formations, their main organic component is ceric. Those of the Green River formation of Utah and Colorado are representative of the group.



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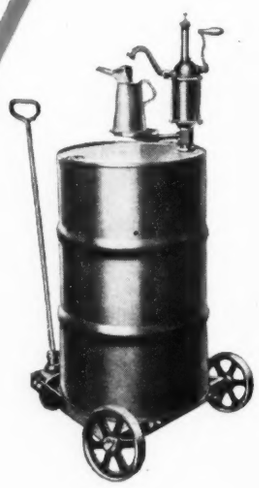

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Rapid test for the Decolorizing Efficiency of Fuller's Earth

L. W. Parsons and L. R. Churchill, Massachusetts Institute of Technology.

The paper covers the development of a rapid test for determining the relative efficiencies of various samples of fuller's earth for decolorizing purposes. This test was designed to avoid the necessity for resorting to tedious filtration process in the laboratory to determine the quality of the clay, and it serves two purposes; first, to compare the decolorizing power of various clays used in experimental investigations; and, second, to serve as a rapid control test for plant operation.

A survey of the properties of fuller's earth which would parallel its power to decolorize oils, is given, and the development of several different tests is indicated. The most satisfactory test, however,, is based on the reaction between fuller's earth and pinene. Fuller's earth reacts vigorously with pinene to form polymerized products with the development of a very large amount of heat. The amount of temperature rise is used as a measure of the efficiency of the clays, and data are given to show the relation between this pinene efficiency and the decolorizing power of such clays. A discussion of the mechanism of the reaction, the materials used, and the application of the test for laboratory and plant use is indicated.

Mutual Solubility of Hydrocarbons, Fats and Liquid Sulphur Dioxide

E. Zerner,, H. Weisz, and H. Opalski Zeitschrift Angewandte Chemie, Vol. 35, 1922.

Hard glass tubes were sealed at one end and drawn out at the other, and weighed quantities of the oils under investigation and of liquid sulphur dioxide introduced, after which they were sealed while in a freezing mixture. They were then immersed in a bath, by which their temperature could be controlled, and the point of precipitation observed. The commercial sulphur dioxide used contained 98.85 per cent of sulphur dioxide, 0.56 per cent of water and 0.67 per cent of oil residue. Toluol, n-tetradecane, n-pentatriacontane, decahydronaphthalene tetrahydronapththalene and American kerosene were tested, as also the fatty oils, castor, rape, olive, linseed, and bone fat. The graphs in all cases show a maximum. Paraffins are the least soluble napthenes more so, and aromatic and unsaturated compounds are easily soluble. The solubility decreases with increase in molecular weight. Sulphur dioxide shows great solubility in hydrocarbons.

Means of Effecting Heat Interchange Between Two Fluids, Particularly Applicable for use in Distilling Oils

T. E. Robertson, Power Specialty Co., English Patent 174, 493.

In apparatus for heating fluids, such as pipe stills or steam superheaters, the pipes nearer the furnace receive more heat than those more remote with consequent danger of over-heating the contained fluid. In order to equalize the amount of heat transmitted to the fluid along the whole system of pipes the latter are enclosed in corrugated casings, on which the depth of the corrugations vary more or less inversely, whilst the thickness of the body of the casing varies directly as the temperature difference between the heating and heated fluids.

PRODUCTION SECTION

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Will Make Production Test Of Wells In Salt Creek

Northwest Clara Pool Now Beginning To Take Form

By Special Correspondent

WICHITA FALLS, Jan. 2.— Three new wells are to be added to the list of producers in the new northwest Clara pool, northern Wichita county, opened up by the Murchison & Pigg No. 2 Hirschi several weeks ago by this week's developments. The Murchison & Pigg No. 3, an offset on the east to the discovery well was brought partially in last week and is still only half completed. Though it is flowing steadily, this well is being standardized at present and will be drilled further into the sand and cleaned out within the next few days. The most important of the new wells scheduled for immediate completion is the Texhoma Oil & Refining Co.'s No. 1, Hirschi, 1400 feet north of the discovery well and consequently of interest as an extension. This well is reported to have made 100 barrels in a few flows on Monday and is now shut down to standardize. The R. M. Waggoner well which has been on the sand at 1883 feet for about a week has been drilled in the sand five feet and Tuesday was bailing and showing for a nice well, according to reports from the field.

W. M. Moore was forced to cement the casing in his No. 1 Foster and Allen, an offset to the Waggoner well, to get a seat and Tuesday started drilling into the sand. A fourth test in this new pool, the No. 1 Hirschi of Barkley Meadows, reached the top of the 1800-foot sand Monday and is setting casing. This test is one-fourth of a mile west of the discovery well and its completion as a producer would give another nice extension to the field. Murchison & Pigg had two new locations Tuesday, their No. 4 offsetting the Texhoma well and their No. 5, offsetting the Barkley Meadows well.

Doheny Interests Buy Clark & Melat Property

HOUSTON, Dec. 28.—It became definitely known today, for the first time, that the previously announced entry of the Edward L. Doheny interests into the Smackover, Ark., field included the purchase of the Clark & Melat 80 acres and one completed well in 4-16-16. The well originally was rated good for 8000 barrels daily production, but bridged over when completed. It is on a part of the C. L. Saxon tract, which adjoins on the south an original 80-acre C. L. Saxon lease of The Texas Co.

It will be recalled that The Texas Co. recently purchased the adjoining R. S. Saxon leases from Pat Marr et al, who completed the original light oil producing well in 4-16-16, which is southwest of Smackover heavy oil production about three and a half miles.

In addition to the 80 acres acquired in 4-16-16, acreage was also taken over in Sec. 9 from Clark & Melat. The total involved was about 180 acres. The consideration was $500,000 cash and the balance of a total of $1,700,000 to be paid out of oil produced.

Mexia-Currie Crude Oil Prices Advanced 25 Cents

HOUSTON, Dec. 28.—The Texas Co., effective Dec. 28, advanced the posted price of Mexia crude 20 cents a barrel to $1.55 and Currie field crude 20 cents to $1.80. Humble Oil & Refining Co. immediately met the new price. The Magnolia Petroleum Co., and other purchasing companies that buy in these two east Texas were expected to meet it at once.

The Texas Co. had previously posted a 10 cent advance on each of these two grades, Dec. 14, the current rise representing the second within two weeks. Currie production, from a Navarro county pool northeast of Mexia about 15 miles, tests 40 gravity and above; this condition accounting for the higher posted price.

Eastern Crudes Advanced

PITTSBURGH, Dec. 30.—On Saturday morning, Dec. 30 the Seep Purchasing Agency advanced the credit balance market for all eastern grades of crude, except Corning, Ohio and Ragland, Kentucky. The present quotations are as follows: Pennsylvania, $3.25; Cabell, $2.11; Somerset, $1.90 and Somerset light, $2.15. On July 19 of last year, the quotation for crude of the Pennsylvania grade was reduced from $3.25 to $3.00, at which it remained down to the close of the year. The Somerset price quoted above does not include 6 cents paid for oil run on or after Oct. 1, 1922.

CASPER, Jan. 2.—The Graver Corp. has shipped 200 cars of tank steel to Glencross, near Glenrock, Wyo. It is stated here they are for the Sinclair Crude Oil Purchasing Co.'s tank farm. The exact location of this is not known. Forty miles of pipe was reported purchased in Pittsburgh and is thought to be for a line for Sinclair from Salt Creek to its tank farm. The Midwest will take care of government royalty oil until Sinclair can provide storage for it.

Salt Creek Runs Are Cut To 20 Per Cent Capacity

CASPER, WYO., Jan. 2.—Effective Jan. 1, pipe lines entering the Salt Creek field began taking 20 per cent of the rated capacity of the wells instead of 40 per cent, as was agreed upon in October. This reduction in runs is for the purpose of cleaning up field storage during this month preparatory to making a field test of all wells, establishing thereby a new basis for the proration of runs.

The general meeting of the Salt Creek Producers association, scheduled to be held at the Henning Hotel in Casper, Jan. 10, beginning at 10 o'clock in the morning, promises to be quite interesting. One of the questions that will be the subject of considerable discussion will be the percentage for the pro-rating of the pipe line runs. It is understood that the Midwest Refining Co. officials claim that the potential daily production of the field is now in excess of 240,000 barrels and that the Central Pipe Line Co. officials challenge this statement claiming that the potential daily production will not run so high. Naturally the Midwest interests claim that they will not be able to resume taking the old percentage from the leases which, until Jan. 1 has been 40 per cent. This has led to the necessity of making another test of the field which will be a rather difficult proceeding as it is understood that practically all field storage is full.

It will be noted that there has been a gradual increase in the pipe line runs from the Salt Creek field in the past few weeks with the maximum quantity for any week in the year having been reached in the week ended Dec. 30 when the total quantity run by the Midwest, Western and Central lines exceeded 93,000 barrels. The Midwest company claims that this quantity is too great a tax on its storage capacity and will ask to have the prorating percentage reduced while the other interests will naturally want to get all of their oil run that they can.

Another question that will come up before the meeting will be a plan for the conservation of the field which will provide for the drilling of enough more wells to bring the total of producing wells in the field to 800 when there will be approximately one well to every 20 acres. This will take care of all offsets as the leases are now held. Another question will be the matter of offsets where adjoining leases are operated by the same company.

Patrick Sullivan is president of the association and A. D. Aitken is secretary. The conservation committee will make a report to the meeting on the questions outlined above having held meetings in Denver and Casper since the general meeting adjourned.

North And Central Texas Areas Generally Quiet Over Holidays

By Special Correspondent

WICHITA FALLS, Dec. 30

A NEW producing sand for the Ivan pool, in Stephens county, some new wells, making extensions of older pools in Eastland county, and rather less than the average number of completions in proven areas, is the summary for developments in the oil fields of the north central Texas district, while in Wichita county the same conditions obtain.

The Texas Consolidated Oil Co.'s No. 3 Martin, a few miles south of Ivan, supplied Stephens county's new deep sand, getting the pay at 3915 feet, according to the reports. This well had an initial production of 650 barrels.

Two new wells, making slight extensions from production, are reported from the Gorman district, south Eastland county. These are the Donnelly Brothers No. 1 Duncan, and the McLester No. 1 Rodgers, both a short distance from the discovery well on the Westmoreland.

In the new Moran shallow field operations continued at about normal, with a fair number of average sized completions.

All fields were practically shut down during the past week, the operators giving the crews opportunity to enjoy a short Christmas vacation. The result of this shutdown will show up even more pronouncedly in the next two weeks.

The Gulf Production Co.'s No. 1 Carl Worsham, near Ringgold, Clay county, continues to hold the general interest as a promising wildcat. This week setting of the six and five-eights casing was finally accomplished, and within the next few days it is hoped to have the hole, which is below 3300 feet, cleaned out, and a test made.

Oil has been standing several hundred feet in the hole for more than two weeks, when a lime was drilled into. The nearest production to this test is on the opposite side of the county, the old Petrolia pool.

There is no production deeper than the 2000-foot level in the Wichita Falls district, and none deper than this closer than the Young county deep wells. For this reason this 3300-foot test in the northeast part of Clay county is of particular interest. Interest in wildcat drilling in Wichita, Clay and Wilbarger, has been at a minimum after a depth of 2500 feet is reached, without results, but one deep lime producer could easily change this feeling.

This test, taken in connection with the wildcatting now under way in Montague county, which joins Clay on the east, has a third significance. Altogether, operators of this district seem to feel that the outcome is of sufficient importance to warrant frequent visits to the Gulf test, and there is as much going and coming to that rig, as to the tests drilling north of Nocana, further east, where Wichita Falls capital and men are also heavily interested.

Texas Fields' Daily Estimated Production

	Dec. 30	Dec. 23
Mexia-Currie	63,800	65,000
Wichita Falls Dist.	58,150	56,460
Ranger, lime	52,225	52,975
Ranger, sand inc. Young county	14,500	14,475
San Antonio	3,400	3,600
Coastal Texas	104,320	107,465
Coastal Louisiana	5,180	6,700
Totals	301,575	306,675

Completions in North and Central Texas, Week Ending Dec. 30.

PANHANDLE

Potter County

Company	Well No.	Lease	Depth	Production
Greater Amarillo Oil	1	Masterson	2600	75 m. gas

WICHITA FALLS DISTRICT

Burkburnett

McNeil, White et al	1	Sides	1300	30

Electra

Green & Dale	8	Beaver Electra Refining	1640	60
McDonnald et al	5	Douglas	1950	250
Ramming, Staley et al	1	Fisher	1900	Dry
Fisher & Gilliland	3	Fisher	1940	Dry
Carter & Carter	2	Fisher	2175	Dry
Baldwin Brothers	6	Langford	900	15
Middle States Interests	66	Burnett et al	1940	150
Empire Gas & Fuel	32	Burnett et al	1840	50
Empire Gas & Fuel	70	Burnett et al	1840	50
Griswold Oil Co	3	Waggoner -E	1510	175

Iowa Park Shallow

Minn-Tex. Oil Co	5	Roller	470	10

Archer County

Swastika Syndicate	1	Richardson	1750	Dry

Clay County

Lone Star Gas	15	Stine	1770	Dry

Young County

Whitehead & Hinson	2-B	McLaren	2350	25
Pitzer & West	1	Costello	4150	Dry

Stephens County

Fidelity Oil	1	Gardenshire	2050	350
Texas Consolidated Oil	3	Martin	3915	650
Texas Pacific Coal & Oil	3	Veale	3175	30
The Texas Co	1	Fite	3615	50
Haile, Knight & Callahan	4	Curry	3180	100

Eastland County

McCamey & Sherrin	2	Brooks	2530	350
The Texas Co	5	Cook	2500	100
Car De Zone Oil Co	1	Agnes Harwood	3630	Dry
Donnelley Bros	1	Duncan	3200	200
McLester et al	1	Rodgers	3200	300

Callahan County

Goodloe et al	2	Allen	330	5

Brown County

Preston Oil Co	2	M. M. Cox	2430	40
Preston Oil Co	3	M. M. Cox	2450	100
Infield Petroleum Co	2	Windham	2440	100
Jordan Petroleum Co	1	Sam Parks	1650	15

Shackleford County

Montgomery et al	1	Carter	640	40
Stovall et al	1	Pritchard	630	10
Brannon & Murray	4	English	650	Dry
Smith et al	1	Rice	640	20
W. H. Helmerych	1	Prittchard	640	15
Lakewood Oil Company	1	Formby	650	10
Humble Oil & Refining	1	Lynch	3580	50
Texas-Gulf Oil Company	1	Webb	800	Dry

Glasscock County

The General Oil Co	1	Neal	2820	Dry

"La Corona" Is Doubling Its Cacalillao Pipe Line

TAMPICO, Dec. 28.—Compania Mexicana-Holandesia "La Corona," S. A., direct arm of the Royal Dutch-Shell interests in Mexico, is doubling the capacity of its pipe line from the Cacalillao section of the general Panuco heavy oil district to its Panuco river loading terminals at Buena Vista. Pipe and other materials from the Southern district are being taken up and transferred to the Panuco region for this work, which will give completed capacity of roughly 80,000 barrels daily from Cacalillao as against the present 45,000 barrels capacity.

Mexican Gulf Oil Co., whose loss of production in Toteco was one of the big factors in the decline of the Southern district's potentialities, is again becoming active in the Panuco region. Four new locations have been made in Cacalillao; other tests are planned in Quintinal, which lies northwest of Panuco proper in the direction of Cacalillao; and the Mexican Gulf, in the aggregate, is drilling or will drill a total of 24 locations in the general Panuco region.

TULSA, Jan. 1.—In the field recently opened up northwest of Wetumka, Hughes County, the Prairie Oil & Gas Co. and Wilhoit No. 1 Hully in the southeast corner of northwest of 5-9-10 is reported to have 3000 feet of oil in the hole at a total depth of 3424 feet. This well is across a 40-acre tract northwest of the Prairie discovery well No. 1 Gregory located in the southeast corner of the northwest of southeast of Sec. 5, which was completed Oct. 14 and is still making 500 barrels daily.

The Indiahoma Refining Co. is drilling its No. 2 Hully at 3110 feet while the south offset is Pure Oil Co.'s No. 2 Cain, which is drilling below 3000 feet. The Prarie-Wilhoit No. 1 Crawford a quarter mile east of the discovery well failed to get production at the 3300-foot level and is drilling deeper in search of the 3800 foot sand found by Transcontinental Oil Co. in its test in 29-10-10. It is now at a depth of 3445 feet and having some trouble with cave-ins. About 12 other wells are drilling in this immediate vicinity, several of them nearing interesting depths.

Oklahoma Producers Are Looking Forward To Improvement in 1923

Staff Special
TULSA, Dec. 30

THE coming of the New Year finds Mid-Continent operators in a most optimistic mood and confident that the immediate future holds great promise of better things for the oil producer. With Oklahoma's production declining, and with no field at present in sight to cause it to do otherwise, the opinion is generally held that within the next 90 days high-gravity oil is going to be even more in demand than it has been for some time past, and that higher prices are bound to come.

It is a matter of conjecture and a subject of much discussion as to what has been the effect of the Prairie's new prices in securing for that company a much-needed infusion of high grade oil into its lines. Most producers are of the opinion, without, however, having much in the way of actual facts to back up that opinion, that the Prairie has not been able to secure any great amount of new oil, and that it will have to offer still higher prices than those at present in effect. Inasmuch as the Prairie will not give out figures on its daily purchases, it is impossible to state whether this opinion is sound, or whether it merely represents the wish as father to the thought.

It is noteworthy that refiners still are getting all the oil they need, and at the posted price for the particular grade they happen to be using. Premiums are being paid in only a comparatively few instances, it is said, and are small in amount. Thus the producer is sticking to the Independent refiner, whose payment of premiums in the past was responsible for posting of the prices in effect today.

It seems almost a certainty that the curve of Oklahoma production will take a decided downward trend during the coming two or three months, judging by present performance of producing fields and by prospective territory now in sight. With Burbank rapidly approaching the point where its present area will be entirely drilled up, and with at least 90 days to elapse before completion of wells on leases to be sold at the next sale, there is nothing in sight there to stay the decline which has already set in, and it is entirely possible that this field will not again reach the high production figures it has attained in the past. Tonkawa is the only field in the state today that is increasing in production, and its average has changed but very little during the past few weeks, in spite of several large recent completions.

Every other field in the state is at present declining in production, with no immediate prospect in view that will cause it to do otherwise. Thus from the standpoint of present producing areas, there seems considerable justification for the frequently heard prophecy that the next few months will see a large falling off in Oklahoma production.

There remains, of course, the possibility that new fields will be opened up through wildcatting, and this is a possibility that is always with us. Some time must necessarily elapse, however, for development of a new field following the discovery, and the new field would have to put out a large amount of flush production to have much effect on the situation in Oklahoma in general.

Oklahoma and Kansas Estimated Daily Average Production

Oklahoma

	Dec. 30	Dec. 23
Bristow District	58,500	59,000
Burbank	84,640	85,030
Cushing District	28,000	28,450
Healdton	18,000	17,900
Hewitt	26,750	27,300
Lyons	11,500	12,500
Osage, except Burbank	36,000	36,400
Oklahoma, general	156,500	156,500
Total	419,890	423,080
Decrease		3,190

Kansas

Augusta	15,500	15,600
Elbing-Peabody	13,800	13,800
El Dorado	17,600	17,690
Florence District	11,700	11,900
Greenwood County	14,700	14,675
Kansas, general	13,800	13,850
Total	87,100	87,515
Decrease		415

Therefore the outlook for the Oklahoma producer is promising, and he is anticipating that 1923 will be a good year for the industry generally. Of course, the producer of low gravity oil is not any too jubilant over present conditions nor future prospects, but he takes the stand that things are bound to get better, for they certainly could get no worse.

The Year in Brief

The year 1922 was on the whole a good one for the producer, especially when compared with the year just preceding it, and while oil men had their ups and downs, they are finishing the year in good shape and full of fight. They had six and a half months of $2 oil, followed by a little more than four months of $1.25 oil, while the last six weeks of the year found them wrestling with the problem of selling their crude on a gravity basis, and trying to figure how they were going to come out under the new order of things.

The year now closing saw the rise and fall of the Lyons pool, the discovery and subsequent limitation of the Amerada discovery south of Ardmore, the opening of the Okemah field, the rapid expansion of the Burbank field, the sensational Roland well near Bristow, the drilling in of numerous semi-wildcats in Creek county, the discovery of oil on Turkey Mountain, Tulsa county, discovery of the Wilcox sand in old shallow territories, the finding of oil near Sayre, Beckham county, the development of the Chickasha gas field, and many other incidents, all of which were interesting at the time, but many of which have been all but forgotten in the rush of later events.

Oklahoma's production increased over 100,000 barrels daily during the year, and reached new high levels which have been maintained consistently since, with only small fluctuations one way or the other. For the closing week of 1921, Oklahoma was producing 312,000 barrels a day, as compared with about 420,000 barrels at the present time. The latter is probably about 15,000 barrels under the state's peak figure, which was reached during July. Burbank was producing 32,500 barrels daily during the final week of 1921, as compared with 84,600 barrels at present. Tonkawa was in its infancy and Lyons had not reached the dignity of a place in the table of production estimates. Lyons reached a maximum of about 50,000 barrels a day during 1922, but went off rapidly following salt water encroachment, and is now producing about 12,000 barrels. Burbank reached a high figure of 88,700 barrels daily just preceding the government's anti-drilling order in October, an order which caused its production to go off considerably during the ensuing weeks. Since the lifting of the order, the field gradually climbed back to its high mark and finally passed it about three weeks ago, when it reached about 89,000 barrels daily. This was its supreme effort, however, as it declined about 3000 barrels the next week, and has been going off slowly ever since.

To get back to the present, the past week has exhibited all the customary holiday dullness, with few developments of interest, and with a distinct inclination on the part of operators to put everything off until after the first of the year, when things are expected to pick up with a rush. Burbank continued to decline slowly, in spite of several new wells added to the total, while Tonkawa increased somewhat, although not as much as recent large wells there indicated it would. Tulsa operators desisted from their Christmas celebrations long enough to note approvingly that crude oil prices had been increased in Pennsylvania, Wyoming and in the Mexia district of Texas, but nothing else that transpired during the week caused more than a passing ripple of interest.

Production

Oklahoma's production during the week just closed, according to estimated figures, continued the decline that has characterized it for several weeks past, this time falling off 3190 barrels as compared with the preceding week. The state's total is now estimated at 419,890 barrels daily, as compared with 423,080 the week before.

The latest available estimate of production at Burbank shows that this field averaged 84,640 barrels daily during the week ending Dec. 27, as compared with 85,030 barrels for the preceding week. Its present production is coming from 773 wells, or eight more than were included in last week's estimate. This is an average production of 109.5 barrels per well daily, as against 111 barrels last week.

Wells Completed

In Oklahoma, during the week just closed, 63 wells were completed, of which 32 were oil wells, 11 were gas wells and 20 were dry holes. This is a continuation of the decrease in drilling operations which has been noticeable for several weeks, last week there having been a total of 81 completions, divided 42 oil wells, 12 gas wells and 27 dry holes.

Oil wells completed in Oklahoma during the past week, totaling 32, had a total initial production of 9295 barrels, a considerable decrease from last week's fig-

ures, which were 11,187 barrels. Average initial production per well this week was 290 barrels, as compared with 266 barrels last week.

Completions reported from Kansas this week totaled 23, of which 10 were oil wells and 13 were dry holes. Last week there were only 11 total completions, divided six oil wells and five dry holes.

Burbank

The principal feature of the Burbank field developments during the past week was the abandonment by the Twin State Oil Co. of its deep test in the NW¼ of 36-27-5, after having drilled it to the second break in the lime. This well missed the Burbank sand altogether, and had a hole full of water in the Wilcox.

Burbank's production declined 390 barrels during the week, although a number of good wells were brought in during that period, and gave further evidence that the field has passed its peak for the time being, at least.

Postponement of the Osage sale to a date about 60 days later than it usually would have been held, together with recent developments on leases which sold for fabulous sums at the sale of June 28, presents an interesting situation, and is the subject of considerable discussion. The success attained by the Skelly-Phillips and Gypsy companies on the acreage they bid in at the highest prices ever recorded for Osage tracts, and the large wells which these companies have been steadily completing of late, show that they made good investments after all, although many operators doubted the wisdom of paying such prices.

From this angle, it may well be that there will be other companies ready and willing to go into the million and a half dollar class in bidding, if necessary to secure some of the acreage which is to be offered along the north edge of the pool. An offset to this, however, is the fact that the tracts to be sold have been undergoing drainage from adjoining leases for 60 days or so, which will undoubtedly have some effect upon the valuation placed upon them by prospective purchasers.

Buying Burbank leases remains as one of the greatest gambles known to the industry The ingenious method used by the Indian agency in offering only a few tracts at a time renders more remote the possibility that the field may be definitely defined between sales, so that each auction finds several tracts put up, each adjoining big production, but with no other way of telling whether they will be productive or not. In this way, as long as producers continue to pay the million or better prices, somebody is bound to get stung sooner or later, but the Indians will have theirs.

Tonkawa

The past week has been a quiet one in the Tonkawa field, no wells having been reported as completed, although there are several wells on top of the sand or pulling the big pipe which will be in within the next few days. About 75 wells are at present drilling in the field.

The well of the Comar Oil Co., its No. 1 Beverlin, in the southeast corner of the NW¼ of 34-25-1W, which was reported last week as having extended the field a half mile to the north, has a fishing job on hand which is delaying its completion. The well made 420 barrels the first 24 hours in sand from 1838 to 1853, but as it had been intended to drill on down to the lower pay, an attempt was made to case this sand off. In running the six and five-eighths casing, 14 joints were dropped, thus holding up drilling. The company is moving in a rotary outfit to drill a twin to this well, to be completed in the 1800-foot sand.

Recent completions in the north side of the field indicate plainly that the structure is rising as development goes north,

Completions In Oklahoma And Kansas For Week Ended Dec. 30, 1922

OKLAHOMA

Caddo County

Company	Well No.	Location	Depth	Initial Prod.
Skirvin & Sykes	1	SE SE 23-5n-8w	1262-80 and 1287-1343	25M

Carter County

Company	Well No.	Location	Depth	Initial Prod.
Magnolia Petroleum Co.	7	NW NE 27-2s-3w	2136-56	15
C. R. Smith	6	SE NE 27-2s-3w	2407-43	40M
Amerada Pet.	1	NE SW 34-5s-1e	T. D. 1430	Dry

Comanche County

Company	Well No.	Location	Depth	Initial Prod.
Waldman et al.	2	NW NE 23-1n-9w	2174-82	30

Cotton County

Company	Well No.	Location	Depth	Initial Prod.
Scott & Arington	1	NW NE 23-1s-10w	2147-48	1M

Creek County

Company	Well No.	Location	Depth	Initial Prod.
Bright et al.	3	NE SE 24-16-11	410-416	1M
Laurel O. & G.	1	SE NE 15-16-9	2950-2960	45
Waite-Phillips	4	SWc 33-16-9	2960-2971	70 hr.
Eddie Oil Co.	1	NE NW 4-15-9	2917-2927	50 hr.
Gypsy	2	NW NE 4-15-9	2920-2937	30 hr.
Gypsy	3	NW NE 4-15-9	2910-2928	45 hr.
Gypsy	7	NW NE 4-15-9	2953-2974	25 hr.
Texas Co.	3	NEc NW 4-15-9	2906-2922	750
Texas Co.	6	NE NW 4-15-9	2914-2924	750
White Oil Co.	1	SE NW 32-15-10	3053-3059	10
Skelly Oil Co.	1	NWc SE 35-14-8	2498-2565	30
Joemac Oil	3	SE SW 10-16-9	T. D. 3006	Dry
Wolfe Oil	2	NE SW 10-16-9	T. D. 3010	Dry
Independent O. & G.	1	SWc NE 7-14-8	T. D. 3360	Dry

Garvin County

Company	Well No.	Location	Depth	Initial Prod.
Magnolia Petroleum Co.	1	SW SW 10-1n-3w	1558-68	100
Humble Oil & Ref. Co.	2	SE NW 13-1n-3w	1637-41	50
T. P. & C. Coal Co.	4	SW NE 16-1n-3w	1576-79	20
Magnolia Petroleum Co.	1	SE NW 16-1n-3w	1560-63	50

Kay County

Company	Well No.	Location	Depth	Initial Prod.
Bedsoe Oil & Gas	1	NWc SW 29-26-1w	3510	Dry
Ossenbeck & McMann	1	SWc 26-25-1w	3670	Dry

McIntosh County

Company	Well No.	Location	Depth	Initial Prod.
G. W. McClain	1	NE SE 9-11-15	2622	Dry

Noble County

Company	Well No.	Location	Depth	Initial Prod.
Comar Oil Co.	4	NE NE 3-24-1w	2504-2570	6M

Okfuskee County

Company	Well No.	Location	Depth	Initial Prod.
Burke-Greis	1	NE NE 1-10-9	2910-58	25M
Cosden & Co.	1	NW NW 6-10-10	2946-72	25M
McMann Kimble & Cree	1	SEc SW 36-11-9	2932-60	25M
E. B. Lawson	1	SEc SW 12-11-11	2745-49	15M
Bar "B" Oil	1	SW NE 6-12-11	2661	Dry

Okmulgee County

Company	Well No.	Location	Depth	Initial Prod.
Denver Prod. & Ref. Co.	1	NW NE 31-13-11	2594-2596	100
Mitchell Oil	6	SW NE 30-12-12	2574-2576	180
Wooster Oil	1	NEc 31-12-13	1500-1570	1½M
Eagle Pitcher Oil	3	SW NW 3-11-12	1880-90	10 qt.10 bbl
Flesher Oil	1	SE NE 30-12-14	2845-2859	10
Black Pet. Co.	2	NW NE 16-14-14	T. D. 2602	Dry
Dominafreed	2	NEc 27-15-11	T. D. 2408	Dry
A. C. Saint, Tr.	1	SWc 22-13-13	T. D. 1930	Dry
Rapp et al.	1	NW NE 30-13-13	T. D. 3020	Dry

Osage County

Company	Well No.	Location	Depth	Initial Prod.
Lawrence Oil & Gas	2	SF NE 2-21-11	2296-2310	100 qt.10bbl
Howard & Duffield	4	NE SE 25-21-11	1559-73	40
Marland Oil	16	NW NW 36-23-7	2874-78	10
Western American Oil	5	WH NE 28-24-10	1270-86	55 qt. 50 bbl.
Wynona Oil	2	NE SW 33-24-10	1334-48	60 qt. 35 bbl.

Osage-Burbank

Company	Well No.	Location	Depth	Initial Prod.
Carter Oil Co.	2	NE NW 12-26-5	2843-2907	50
Carter Oil Co.	14	NW NE 8-26-6	2859-2925	150
Cosden Oil	13	NE NE 17-26-6	2890-2951	205
Gypsy Oil	8	SE SE 24-27-5	2917-84	1000
Sinclair Oil	17	NE SW 36-27-5	2905-65	75
Twin States Oil	3	NE NW 36-27-5	3495	Dry

Pawnee County

Company	Well No.	Location	Depth	Initial Prod.
Thornton et al.	1	SW SE 19-20-8	2540	Dry

Payne County

Company	Well No.	Location	Depth	Initial Prod.
Magnolia Petroleum Co.	1	SW SW 23-19-4	3940	Dry

Stephens County

Company	Well No.	Location	Depth	Initial Prod.
Sarrel et al.	1	SWc NE 31-2n-8w	2431-46	5M
Parks Palmer & Williamson	4	SEc 20-1s-9w	2495	Dry
Hansey & Jenkins	6	NW NE 29-1s-9w	2270	Dry
Robertson et al.	1	SE NW 18-1s-8w	2280	Dry

Tulsa County

Company	Well No.	Location	Depth	Initial Prod.
Geo. Webster et al.	2	NE SW 24-19-14	2140	Dry
McAdoo Oil	4	SW SE 34-19-14	1464	Dry
West et al.	9	SW SW 1-18-12	1457-1475	15

Waggoner County

Company	Well No.	Location	Depth	Initial Prod.
Savoy Oil	4	SE NW 4-16-15	1047-1071	225
McCarthy Oil	1	NE SE 9-16-16	1500	Dry

KANSAS

Butler County

Company	Well No.	Location	Depth	Initial Prod.
Gypsy Oil	2	SW SE 1-24-4	2470-2474	15
Lewis Oil	17	NW NW 31-29-6	2726-2754	60
Francher et al.	1	SE SW 1-23-4	T. D. 3465	Dry
Rayber et al.	1	SW NE 10-25-6	T. D. 2820	Dry
Henderson et al.	1	NE NE 9-26-6	T. D. 2800	Dry
Weidner et al.	1	SE SE 8-28-5	T. D. 2910	Dry
Inland & Davis	2	NEc SW 24-28-5	T. D. 2753	Dry
Lewis Oil	8	SW 26-28-5	T. D. 2810	Dry

Comanche County

Company	Well No.	Location	Depth	Initial Prod.
Intersea Service	1	SEc NE 36-31-16W	T. D. 3003	Dry
Intersea Service	1	NWc 11-32-16	T. D. 1205	Dry

Cowley County

Company	Well No.	Location	Depth	Initial Prod.
Arkansas Fuel	1	SW SW 6-32-5	2325-2342	20
National Refg.	1	NEc SE 25-30-7	T. D. 2760	Dry
McAdoo et al.	1	SWc SE 17-31-7	T. D. 2877	Dry
McNabb et al.	1	NEc SW 24-32-4	T. D. 1500	Dry
Mid West Oil	1	SEc 23-34-6	T. D. 2580	Dry
Conley et al.	2	NE SW 26-30-9	T. D. 1560	Dry

Greenwood County

Company	Well No.	Location	Depth	Initial Prod.
Sharpless et al.	1	SWc 5-22-10	2327-2344	150
R. G. Gillespie	2	NW NE 33-22-11	1954-1969	25
Carter Oil		SWc NE 7-22-13	2245-2272	10
Carter Oil	1	7-22-13	T. S. 2250	250
White Eagle	2	SW NW 24-23-10	T. S. 2010	150
Mid-Kansas	2	NW NW 3-23-9	2177-2207	50

Marion County

Company	Well No.	Location	Depth	Initial Prod.
Watchorn Oil	24	NE SE 5-22-4	2344-2346	85

as wells drilled by the Comar, Gypsy and Slick are finding formations considerably higher than in wells farther south. It is apparent, however, that the field will go either northeast or northwest, as it is cut off to the north by the deep dry hole of Ossenbeck & McMan, located in the southwest corner of 26-25-1W. This test, which is a mile north of the big well reported last week by Comar Oil Co. and T. B. Slick, was drilled to a total depth of 3670 feet, where it has been abandoned.

There are now about 75 wells drilling in the field, with 67 producing wells averaging about 29,000 barrels daily. One day last week the field produced more than 32,000 barrels, the highest it has ever recorded to date, but its weekly average was considerably below that figure.

Gas Line To Alexandria

SHREVEPORT, LA., Dec. 29.—Advices received here are to the effect that the Southern Carbon Co. will organize a subsidiary corporation to build and operate its Louisiana gas line from the Monroe gas field to Alexandria, according to a letter from Reid L. Carr of New York, secretary of the company, receipt of which is reported at Monroe. Work of building the line, it is stated, will begin about March 1, and completion is expected by Sept. 1. The line, it is reported, will parallel the Missouri Pacific railroad and will have enough capacity to supply gas to all towns and cities along the route. The Southern Carbon Co., it is announced, will not engage in the distribution of gas to individual consumers, its plans contemplating the furnishing of gas at wholesale rates to companies or communities undertaking to distribute it.

Will Drill In New Mexico

DENVER, Dec. 29.—The Producers & Refiners Corp. is moving material to its location on the Ute reservation, San Juan county, New Mexico, in 1-31-14, about 17 miles northwest of Farmington. The same company is making location on the Tocito structure, south of the well drilled in 19-29-16 by the Midwest Refining Co. on the Hogback structure which will make a commercial well when completed. The P. & R. has let contract for three concrete reservoirs at the Tocito leaseholds to provide water for this test.

Midwest has completed work of laying a covering for the water line from the San Juan River to its Hogback well and completion of this well, it is understood, will be followed by other tests in the vicinity.

SHREVEPORT, LA., Dec. 30.—Mann et al completed McLanahan No. 1, in 6-16-16, a quarter of a mile east of the Gulf Refining Co's James well, Smackover district. The initial yield is estimated at 7,000 barrels. The well extends the Smackover field one fourth mile south and east.

HOUSTON, Dec. 31.—The Texas Co.'s No. 2 Barrow on the Barbers Hill salt dome is a 1200 barrel completion at 3038 feet. It is on the southwest side of the dome and close to earlier wells in the same field completed by Mills Bennett et al.

Twin State Abandons Burbank Test First In Field Drilled To Wilcox

Staff Special

TULSA, Dec. 28.—The Twin State Oil Co. has plugged and abandoned its deep test in the Burbank field, after having drilled it to a depth of 3495 feet. This test, which is located in the northeast corner of the NW¼ of 36-27-5, missed the regular Burbank sand altogether, and was drilled on down to the Wilcox sand, or the second break in the Mississippi lime. This formation was dry, with a hole full of water in lime at 3469 feet, and drilling was stopped in blue shale at 3495 feet. As a last resort the hole was plugged back and given a shot at the point where the Burbank sand should have been, 2952 to 3000 feet. This also was without result, and the test was abandoned.

As this is the deepest well yet drilled in the Burbank field, and is the first test taken down to the second break, its log may be of interest and is given herewith.

Although the well was dry, it is not a case of defining the edge of the pool, as production has been developed to the west of it, but was simply a pinching out of the sand at this particular point. The Twin State Oil Co. has two producing wells on this lease producing about 100 barrels daily. All three offsets to the Twin State dry hole also were good wells.

Log of deep test drilled by Twin State Oil Co. in NE corner NW¼ 36-27-5 Burbank field, Osage county, Okla.

Gray lime		20
White lime	20	55
Gray lime	55	80
Pink Shale	80	100
Gray lime	100	105
Yellow lime	105	130
Pink shale	130	140
Gray shale	140	160
White lime	160	170
Dark slate	170	180
Soft yellow lime	180	190
Hard white lime	190	195
Black slate	195	205
Pink shale	205	220
Gray shale	220	225
Blue slate	225	255
Blue shale	255	265
Blue slate	265	280
White lime	280	295
Blue shale	295	300
White lime	300	305
Blue slate	305	310
White sandy lime	310	320
Gray shale	320	335
White lime	335	345
Gray shale	345	385
Black shale	385	415
Gray shale	415	425
White lime	425	430
Gray shale	430	450
Dark shale	450	470
Gray shale	470	490
White lime	490	505
Gray shale	505	560
White sandy lime	560	570
Red shale	570	580
White lime	580	595
Red shale	595	600
Gray shale	600	625
White sand	625	650
Blue slate	650	655
White lime	655	668
Black shale	668	680
Blue slate	680	692
Pink shale	692	695
White lime	695	700
Gray shale	700	712
White lime	712	725
Blue slate	725	730
Gray sand and water	730	737
Gray sand	737	740
Blue shale	740	747
Blue slate	747	770
Dark shale	757	757
Blue slate	770	785
Blue slate	785	800
Red slate	800	805
White sand	805	832
White shale	832	836
Sandy lime	836	842
White lime	842	845
Blue slate	845	855
Lime	855	857
White lime	857	860
Blue shale	860	870
White lime	870	882
Slate	882	902
White shale	902	915
Lime	915	940
Blue shale	940	945
Blue slate	945	950
White lime	950	960
Blue slate	960	975
White lime	975	1005
Red slate	1005	1030
Sand	1030	1040
Red rock	1040	1080
Gray sand	1080	1110
Red rock	1110	1120
White lime	1120	1125
Blue shale	1125	1135
White sand	1135	1155
Blue slate	1155	1160
Slate	1160	1165
White sandy lime	1165	1180
Blue slate	1180	1188
Blue shale	1188	1240
Black slate	1240	1252
Blue shale	1252	1284
Blue slate	1284	1290
Gray sand	1290	1295
Red rock	1295	1300
Blue shale	1300	1310
Blue slate	1310	1365
Water sand	1365	1385
Blue slate	1385	1390
White lime	1390	1400
Blue slate	1400	1435
Red rock	1435	1445
Blue shale	1445	1455
Blue slate	1455	1473
Blue shale	1473	1495
Blue slate	1495	1515
White lime	1515	1522
White sandy lime	1522	1525
White sand	1525	1540
Blue shale	1540	1543
White lime	1543	1550
Blue shale	1550	1558
Hard blue lime	1558	1562
Blue shale	1562	1575
White lime	1575	1590
Blue shale	1590	1592
Blue slate	1592	1602
Blue slate	1602	1635
White lime	1635	1650
Blue slate	1650	1692
White lime	1692	1713
Blue shale	1713	1715
Blue slate	1715	1740
Blue slate	1740	1750
White lime	1750	1791
Blue slate	1791	1795
Black slate	1795	1808
Blue slate	1808	1822
Sandy lime	1822	1830
Gray sand	1830	1850
Gray sandy lime	1850	1865
Gray lime	1865	1880
Blue slate	1880	1895
Sand	1895	1901
Blue slate	1901	2000
Brown lime	2000	2005
Blue slate	2005	2056
Brown lime	2056	2065
Blue slate	2065	2075
Shale	2075	2085
Dark shale	2085	2125
Dark shale	2125	2140
Sandy	2140	2143

Lubricant Plant At Sour Lake

HOUSTON, Jan. 2.—Construction of a 1200-barrel lubricant refinery at Sour Lake, Texas, will go ahead within the next few weeks, it is learned with arrival at Sour Lake of engineers who will supervise the work. The new plant will absorb and supplement small units previously operated by Rio Bravo Oil Co., which latter is a subsidiary of the Southern Pacific Railroad. It also will obtain part of its crude supply from the Rio Bravo under contract. The new enterprise is headed by C. J. Laughren of Los Angeles who already has F. R. McArthur on the job as chief engineer. E. C. Brown, assistant engineer and T. B. Boyce, consulting engineer.

Smackover Pool Production Climbs Above 100,000-Barrel Daily Mark

By Special Correspondent

SHREVEPORT, Dec. 29

BOTH initial and daily average production registered substantial improvement in the Shreveport territory, embracing the southern Arkansas fields, during the week just closed. The record for the week showed 42 completions, of which five were failures, four gassers and 33 producers with combined initial yield 64,565 barrels, compared with the preceding week's record of two gassers, 5 failures and 21 producers with combined initial yield 55,245 barrels. Increase in initial yield for the seven days totaled 9320 barrels, while there was an increase of 12 in number of producers and 14 in number of completions.

The daily average production for the week reached a total of 201,847 barrels, which was an increase of 35,760 barrels for the week. The major portion of the improvement in initial and daily average yields was in the Smackover, Arkansas, district. In initial yield it showed a gain of more than 11,600 barrels as compared with the previous week, and its gain in daily average yield was more than 37,000 barrels. For the first time in the history of the Smackover district proper the daily average production exceeded 100,000 barrels, and the three Arkansas districts had a total daily average yield of 127,587, a high mark for that state.

The first deep test to produce oil in the Arkansas area was put on the beam yesterday, according to advices to oil circles here, and is yielding about 300 barrels daily from a depth of 2620 feet. It is the Vinson Tatum well in 11-16-16, belonging to the El Dorado Natural Gas Co.

The Smackover field was extended during the week to the northeast by the successful completion of the Lewis B-I of the Forest Oil Co. in 26-15-16, yielding 15 million feet of gas and 500 barrels of oil, at 2065 feet. A small gasser completed by Simmons and associates in 2-16-16 aided in proving the territory between the large Olvey well in 1-16-16 and The Texas Co.'s Saxon well in 4-16-16.

SHREVEPORT, Dec. 29.—During the week just closed daily average production in the Shreveport territory, embracing southern Arkansas, for the weeks ending Dec. 21 and Dec. 28 in north Louisiana and south Arkansas were as follows:

	Dec. 28	Dec. 21
Caddo light	8,825	9,120
Caddo heavy	2,380	2,720
Red River-DeSoto	7,020	7,260
Haynesville	40,120	41,762
Homer	11,015	11,421
Bellevue	4,900	4,850
El Dorado	22,985	21,740
Smackover	104,182	66,894
Stephens	420	320
Total	201,847	166,087

By districts the record during the week just closed compared with that of the preceding seven days' period was as follows:

Haynesville, Louisiana: no completions the current week, compared with one 120-barrel producer the previous week.

Webster parish, Louisiana: one gasser the current week, compared with one completion, a failure, the previous week.

Bossier parish, Louisiana: four completions, two of them failures and two being producers with total initial yield 50 barrels, one of the producers being in the Bellevue shallow depth area; the previous week recorded one producer, a 55-barrel well in Bossier.

DeSoto parish, Louisiana: no completions, against two failures the week before.

Morehouse parish, Louisiana: no completion, against one gasser the previous week.

Stephens district, Arkansas: one 225-barrel well, against no completion the previous week.

El Dorado, Arkansas: no completion the current week, compared with one failure and two producers with combined initial production 500 barrels the previous week.

Smackover, Arkansas: 29 completions, three being gassers, and 26 producers with combined initial yield 64,160 barrels the current week, compared with one gasser and 16 producers the previous week, initial yield then being 52,560 barrels. The initial production in Smackover increased 11,600 barrels, and there were 10 more producers as compared with the preceding week's record.

Homer, Louisiana: no completion, and none the previous week.

East Texas: no completion, and none the previous week.

An interesting completion in Webster parish was the Wheeler No. 1 of Daniel Boone et al in 35-23-11, at 2682 feet, capacity 20 million feet of gas. It is near the Loyd Harris Pine Woods Lumber Co. well, the only Webster producer to date.

North Louisiana and South Arkansas Completions Week Ending Dec. 28

LOUISIANA

Owner	Well	Location	Depth	Yield
Webster Parish				
Daniel Boone et al	Wheeler No. 1	35-23-11	2683	20 m. gas
Bossier Parish				
Perkins et al	Gayle No. 1	33-20-13	2325	Dry
Standard Oil	Wyche No. 11	14-19-11	370	20
Texas Co	Caplis No. 13	24-16-12	1555	30
Gulf Refining	Hodges No. 11	24-16-12	4437	S. W. Aband.
Caddo Parish				
Gulf Refining	Tyson No. 7	14-21-15	2976	40
Dixie Oil	C. M. L. Co., No. 5	23-21-15	1587	40
Dixie Oil	Robertshaw No. 49	14-21-15	1678	25
Dixie Oil	Slattery No. B-2	21-21-15	1715	Dry
Fortune Oil	Robertshaw No. 16	23-21-15	2800	25
Giles & Herring	Moore No. 1	24-21-15	2400	Dry
Woodbine Oil	Herold No. 2	25-20-15	650	Dry
Arkansas-Stephens				
Middle States Oil	Webber No. 2	24-15-20	2145	225
Smackover				
Houston Oil	Laney No. 2	31-15-15	2010	7000
Metric Oil	Linihan No. 1	36-15-16	2028	5 m. gas and 25 oil
McPhail Oil	Laney No. 3	31-15-15	2045	50
McPhail Oil	Laney No. 4	31-15-15	2040	50
R. J. McMurray	Hirsch No. 1	25-15-16	2050	60
Sinclair Oil	Linihan No. A-4	36-15-16	1999	2000
Standard Oil	Forch No. 4	29-15-15	2020	150
Vitek Oil	McDonald No. 1	36-15-16	2030	1000
Simms Oil	F. A. Laney No. 3	31-15-15	2055	15 m. gas and 25 oil
Roxana Petroleum	Bennett No. 1	32-15-15	2011	7000
Roxana Petroleum	Bennett No. 2	32-15-15	2010	5000
Pure Oil	Brister No. 1	28-15-15	2057	2000
Pure Oil	Brister No. 2	28-15-15	2065	1500
Gulf Refining	Umstead No. 4	32-15-15	2015	25 m. gas and 225 oil
Forrest Oil	Lewis No. B-4	26-15-16	2065	15 m. gas and 500 oil
Newton et al	Poole No. 2	25-15-16	2035	50
Simms Oil	Laney No. B-1	31-15-15	2015	2500
Simms Oil	N. Murphy No. 2	29-15-15	2050	5000
Sinclair Oil	Linihan No. A-2	36-15-16	1995	1200
Standard Oil	Forch No. 3	29-15-15	2034	175
Blue Grass Syndicate	Primm No. 1	1-16-16	2050	40 m. gas
El Dorado Nat. Gas	Vinson Tatum No. 1	11-16-16	2620	300
Gulf Refining	J. W. Primm No. 1	1-16-16	2000	500
Gulf Refining	James No. 1	6-16-15	1995	15,000
Ganzel et al	Leverett No. 1	11-16-16	2075	40 m. gas
Houston Oil	Primm No. 1	1-16-16	2020	15 m. gas and 200 oil
Hunt et al	Parkerson No. 1	1-16-16	2010	6000
Olvey et al	McDonald No. 3	1-16-16	2000	6500
Simmons et al	Rogerson No. 1	2-16-16	2055	5 m. gas

Increase In Permits

SHREVEPORT, Dec. 30.—Permits for drilling 1,049 oil and gas wells during 1922 were issued by Ben K. Stroud, chief of the minerals division of the State Conservation Department, compared to 754 permits issued lat year. The largest number was issued for Claiborne Parish, totalling 541. Bossier Parish was second with 195. Webster was third with 48 and Ouachita fourth with 43 permits. Claiborne had 401 permits issued during 1921, Bossier 33, Webster 27 and Ouachita 15.

Permits issued by parishes this year in Louisiana were: Bienville Parish 6, Bossier, 195; Caddo, 71; Calcasieu, 22; Cameron, 4; Claiborne, 541; DeSoto, 25; Evangeline, 2; Morehouse, 25; Ouachita, 43; Red River, 4; Richland, 1; Terrbonne, 6; Webster, 48; West Faliciana, 3; Arcadia, 11; St. Martin, 5; Vermillion, 2; Iberia, 4; La Fourche, 2; Plaquemines, 2; Natchitoches, 2; Lincoln, 2; Jefferson Davis, 2; Catahoula, 1; Union, 8; St. Bernard, 1; Sabine, 9.

Past Year Saw Rocky Mountain Fields Assuming Major Importance

CASPER, Dec. 30

By A. J. Hazlett

THE Rocky Mountain region had the biggest and best year in the oil and natural gas industries in its history in 1922. While the year 1922 in volume of business was probably double that of 1921, already sufficient new enterprises are assured to predict with almost certainty that the year 1923 will double the volume of 1922.

Some of the big things planned for 1923 include major pipe lines to connect with eastern trunk lines, a broadening of markets for Wyoming and Montana crude, the establishment of new refineries, pipe line outlets for natural gas, a more intensive development of proven fields and an unprecedented wildcat program.

While no official figures are available for the years of 1921 and 1922, a careful estimate shows that there has been an increase of nearly 65,000,000 barrels in the quantity of petroleum produced in the year 1922 when compared with the record of 1921. The production from the different fields for the two years is shown in the comparative table below:

Fields	1921	1922
Salt Creek	12,378,000	17,500,000
Big Muddy	1,918,000	1,175,000
Rock River	1,665,000	1,565,000
Grass Creek	1,463,000	1,679,000
Elk Basin	737,000	725,000
Lost Soldier	440,000	450,000
Lance Creek	343,000	240,000
Osage	170,000	150,000
Dallas	140,000	165,000
Ferris	90,000	110,000
Mule Creek	72,000	63,000
Pilot Butte	46,000	42,500
Hamilton Dome	33,000	31,000
Montana	1,420,000	2,580,000
Colorado	100,000	75,000
Miscellaneous	50,000	60,000
Totals	**21,065,000**	**26,610,000**

In reviewing the oil and gas events of 1922 in the Rocky Mountain region, easily the most important was the throwing open to exploitation of the Teapot Dome, known as Naval Reserve No. 3. A contract for its development was entered into in April between the government and Mammoth Oil Co. Already vast benefits have resulted. Not only has the Mammoth Oil Co. expended upwards of $3,000,000 in preliminary work such as surveying the structure, building of roads, laying water and fuel lines, establishing permanent camp and starting more than a score of drilling tests but it will prove the direct cause of the laying of a line from Salt Creek to trunk line connection and an increase in crude oil prices which will add millions in revenue to the state, nation and to individual producers.

Other outstanding features in the year 1922, are the entrance of new interests in the Rocky Mountain region including the Texas Co. the Fensland Oil Co., the Western Pipe Line and the Central Pipe Line companies and the organization of an Independent crude oil-purchasing company which is shipping Wyoming crude as far east as Pennsylvania, in competition with crude from other districts. Other interests have expanded their holdings, notably the Midwest, Producers & Refiners Corp., and the Mutual Oil Co.

In exploration work, new fields have been discovered in Wyoming, Montana and New Mexico with good prospects for discoveries in Utah, Arizona, Colorado and South Dakota.

Three new fields have been proven in 1922, Immediately following the completion of the contract for opening Teapot Dome, the Mammoth Oil Co. started a series of 20 tests and have proven the structure for both oil and gas. Early in the spring of 1922, the Gordon Campbell Syndicate discovered oil near Kevin in Toole county, northern Montana which has led to a big play in the Sweetgrass Arch uplift with more than 20 producing wells completed to date and several gas wells. About the middle of the year, the Ohio Oil Co. brought in a 40 million foot gas well in the Frontier formation in the Baxter Basin district in southwestern Wyoming. Immediately following the Midwest Refining Co. brought in a well of about equal capacity six miles from the Ohio's well.

Early in the fall, the Exploration Department of the Midwest Refining Co. brought in a well in northwestern New Mexico which under test of 12 hours made 250 barrels of high grade oil at a comparatively shallow depth. This new district remains to be proven by further drilling. In the closing weeks of the year, the Superior Syndicate of Casper, has a good showing in a well on Sheldon Dome 44 miles northwest of Riverton and about 3 miles southwest from the Maverick Springs field. The oil in the Sheldon Dome well is of high gravity and it would appear that by further drilling another new light oil field may be added to Wyoming

Important extensions were made in the year to several fields in Wyoming. The Elk Basin field was extended nearly a mile by discoveries to the southeast. At Salt Creek, the field was extended to the northwest by discoveries in Sec. 10, on the east in Sec. 29 and to the south in Sec. 20 and 19 and to the southwest on Sec. 14. At Lost Soldier, the field was extended to the northwest by the bringing in of large wells on Secs. 2 and 3.

Deeper Sands Productive

Deeper drilling in the year, also proved production in lower sands. At Salt Creek, a test by the Midwest Refining Co. on Sec. 25, proved the Lakota sand to be productive. In the Grass Creek field, the Ohio Oil Co has a good well in the Tensleep at 4200 feet. In the Poison Spider district the Fargo Oil Co. is drilling a deep test which was originally intended to go to the Madison formation. The bit has now penetrated the Tensleep sand to a depth of more than 200 feet and black oil is slopping over the top of the casing. No test has been made of the well but it is estimated that if allowed to produce from this sand it will make from 500 to 1000 barrels daily In the Big muddy field, the Midwest Refining Co. early in March, found the Lakota sand productive at 3400 feet.

The Year 1922 will be notable for the number of new pipe lines laid both for oil and gas. Two 8-inch lines were completed from Salt Creek to Casper about the same time early in the fall, one by the Western Pipe Line Co. and the other by the Central Pipe Line Co. At the close of the year, a 6-inch line was completed by the Kinney-Coastal Oil Co. from Bolton Creek to the Midwest refineries at Casper. The Producers & Refiners Corp. has under construction an 8-inch pipe line from Salt Creek to the Union Pacific railroad near Rawlins and will complete the southern end of the line, connecting the Lost Soldier, Mahoney Dome and Ferris fields with a 10,000-barrel refinery at the railroad terminus. The southern unit of the line is approximately 55 miles in length. In the year, the Illionis Pipe Line Co. took up its 4-in. line from Lost Soldier to Ft. Steele, a distance of 44 miles and replaced it with a 6-in. line. At the close of the year, this company had started work on a 6-in. international line from the Kevin-Sunburst field in northern Montana to the loading racks and tank farm of the Imperial Refining Co. at Coutts in southern Alberta, Dominion of Canada.

In addition to these lines, the Sinclair and Standard of Indiana interests will lay a 12-in. pipe line from the Salt Creek field to Kansas City, a distance of 720 miles. This line has been assured by the award of the government royalty oil at Salt Creek to the Sinclair Crude Oil Purchasing Co. for a period of five years at Mid-Continent prices. It is also rumored that the Prairie Pipe Line Co. will lay a line from Salt Creek to connect with its transatlantic trunk line in Kansas. This line would be about the same length as the Sinclair-Standard line and each line would have a maximum daily capacity of approximately 40,000 barrels. In addition to these lines it is rumored that the Sundance Pipe Line Co. may lay a line from Salt Creek to some point in Montana. Two other lines are practically assured. The Mutual Oil Co. will no doubt lay a line from Salt Creek to its refinery at Glenrock and the Fargo Oil Co. from the Poison Spider field to Casper. The pipe for both of these lines is said to have been ordered. It is also rumored that the Union Oil Co. of California will lay a line from Maverick Springs field to either Riverton or Shoshoni, a distance of 45 miles. The Superior Syndicate has announced that if it succeeds in bringing in a field at Sheldon Dome, it will lay a line to connect with Illinois line from Pilot Butte to Riverton. This line would be nearly 14 miles long.

Gas Pipe Lines

In the closing weeks of 1921, the Producers & Refiners Corp. and the Midwest Refining Co. completed a joint pipe line from the Carbon county gas fields to the Standard and Midwest refineries in Casper. This line was placed in operation the first week in January, 1922. It has a maximum daily capacity of approximately 50 million feet. About the middle of 1922, the Wyoming Gas Co., owned jointly by Midwest and Sistersville, W. Va., interests, completed a line from No-Wood to Greybull, Wyoming, a distance of 18 miles. This was a 14-inch line and has a maximum daily capacity of 30 million feet.

Late in 1921, the Ohio Oil Co. completed a gas line from the Elk Basin field in Wyoming to Billings, Montana. This line was placed in operation about the first of 1922. This company also com-

pleted a line from Mahoney Dome to Rawlins, Wyoming, late in the summer of 1922. About the same time, the Hope Engineering Co. completed a line for the Thermopolis Gas Co. from Buffalo Basin to Thermopolis, a distance of about 22 miles. Early in the fall of 1922, the Producers & Refiners Corporation extended its Sand Draw-Riverton line to take in the towns of Hudson and Lander, a distance of 20 miles. In the last week of the year, the Ohio Oil Co. completed a 6-in. line from its Berg well in northern Montana to Shelby, Montana, a distance of about six miles.

At the close of the year there were a number of important lines under consideration. With the discovery of gas at Baxter Basin, a line is practically assured from that field to Salt Lake City. It will probably be laid by the Ohio Oil Co. and the United Oil Refining Co. of Salt Lake. This will be a major line, approximately 220 miles in length and will cost in the neighborhood of $8,000,000. Another line that is still under consideration, is one from southern Wyoming via Cheyenne to Denver. This line would be about 200 miles long and cost around $7,000,000. Other lines under consideration include systems for Rock Springs, Green River, Laramie, Douglas and Manville.

Gasoline Recovery Plants

Wonderful expansion took place in the natural gasoline industry in 1922. The Midwest Refining Co. practically doubled its large plant at Salt Creek and has made an appropriation for adding a third unit with even a greater capacity than either of the other two. In the last week of the year. Producers & Refiners Corporation started its big absorption plant just west of Casper. This plant will treat between 30 and 40 million feet daily. This company also completed an absorption plant at Riverton in connection with a carbon black works. These two Riverton plants will have a combined daily capacity of eight million feet. The E. T. Williams Oil Co. remodeled its gasoline works at Salt Creek late in the year and it is now treating gas from the E. T. Williams oil-producing properties in that field.

New Refineries

Of considerable importance was the entrance of the refining department of the Texas Co. in the Wyoming oil fields in 1922. This company is now completing a 10,000-barrel unit of a major rennery, east of the city of Casper. This plant will be in operation by Feb 1, 1923. Producers & Refiners Corp., is also completing part of a 10,000-barrel plant at Rawlins, Wyoming. This plant should be in operation not lated than March 1, 1923. In Montana, small refineries were completed at Miles City and Great Falls and works at Lewistown and Winnett were enlarged. At Salt Lake, the Utah Oil Refining Co. expended more than $600,000 in addition to its works at that place. Midwest Refining Co. made important additions to its refineries at Casper, Greybull and Laramie and added asphalt work to its Casper and Greybull refineries. At Glenrock, Wyoming, the Mutual Oil Co. practically doubled the capacity of its refinery.

Other Important Developments

In the year 1922, the Standard and Midwest refineries of Casper shipped nearly two million barrels of gasoline in tank cars from plant No. 3 at Casper to the docks of the Standard Oil Co. of Louisiana at Baton Rouge for export shipment for the account of Standard Oil Co. of New Jersey. It is reported that this contract has been renewed for the year 1923 with the addition of another million barrels.

In the year major oil companies operating in the Salt Creek field and other Wyoming districts, provided for additional steel storage capacity of approximately 15 million barrels. This storage is apportioned among the following companies in the order named: Midwest Refining Co., Mammoth Oil Co., Texas Co., Sinclair-Wyoming Oil Co., Producers & Refiners Corp., E. T. Williams Oil Co., Western Pipe Line Co., Central Pipe Line Co. and Independent Oil Buying Co.

A number of new allied oil industries, entered Rocky Mountain region in 1922. These include the Frick-Reid Supply Co., Petroleum Iron Works, Black, Sivalls & Bryson, Perkins Oil Well Cementing Co., the Midwestern Torpedo Co. and others.

CASPER, Jan. 1.—The daily average runs from the various fields in the Rocky Mountain region are shown in the following tables as reported by pipe line companies for the weeks ended Dec. 30 and Dec. 23:

Districts	Dec. 30	Dec. 23
Salt Creek	93,700	83,785
Big Muddy	3,045	3,160
Lance Creek	715	740
Pilot Butte	120	110
Lander	535	545
Lost Soldier	1,150	2,210
Rock River	4,200	4,175
Grass Creek	4,350	4,660
Hamilton Dome	500	370
Elk Basin	1,950	1,955
Cat Creek	6,650	6,515
Osage	465	490
Greybull, etc.	175	170
Ferris	510	515
Sunburst	685	850
Miscellaneous	525	500
	119,275	110,750

Looks Like A Good Well

CASPER, WYO., Dec. 30.—Drilling operations have been held up on Sheldon Dome, located on the Shoshoni reservation, Fremont county, by the Superior Syndicate until tanks arrive. Oil has been rising steadily until it is within 700 feet of the top and there is a considerable increase in the gas pressure, after the hole had been cleaned to within 15 feet of the bottom at 2765 feet. Members of the syndicate are confident that it will make a fine producer.

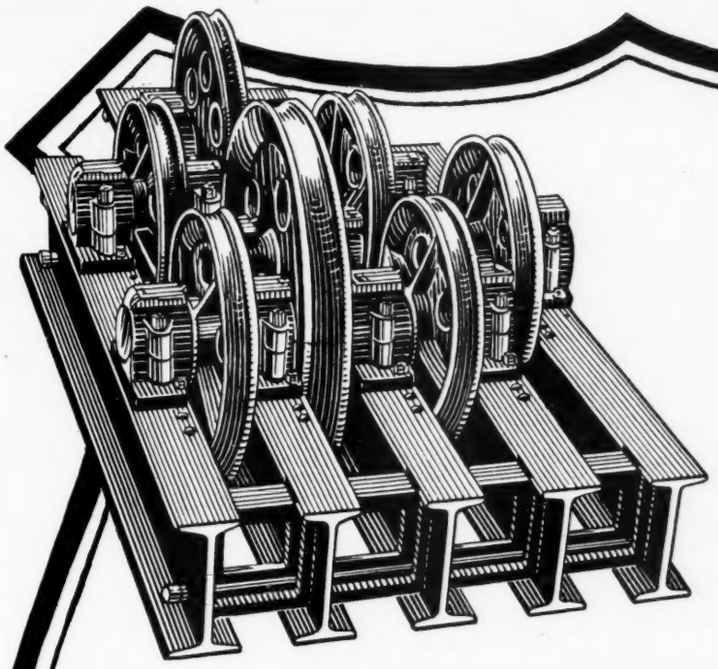
Southeastern, Central Ohio and West Virginia Completions, Week Ending Dec, 30

OHIO

Company	County	Township	Section	Farm	Well No.	Sand	Prod.
Frank Quinn	Harrison	Monroe	1	Matthew Low	4	Berea	1
Delong & Co	Wash'n	Ludlow	1	T. J. Hesson	1	Big Injun	Dry
Samuel Logan	Wash'n	Newport		D. H. Warren	6	Cow Run	1
Citizens Bank	Wash'n	Newport		J. W. Mendenhall	4	Cow Run	2
K. & M. O. & G	Holmes	Killbuck	8	T. E. Lowe	2	Berea	Gas
Carter Oil	Licking	Hopewell	22	Edith Bay	1	Clinton	Gas
E. H. Everett	Licking	Hanover	10	J. J. Simpson	3	Clinton	110
I. I. Hazlett	Licking	Hopewell	23	J. E. Armstrong	3	Clinton	50
Romine, Jackson	Wash'n	Independence		S. Edwards	5	Salt	5
Brown Hrs	Wash'n	Independence		Brown Hrs	8	Maxon	5
Wilson & Co	Wash'n	Lawrence	29	D. Ludwig	1	Cow Run	Dry
Logan Gas	Hocking	Benton	27	T. J. Burns	1	Clinton	Dry
Logan Gas	Fairfield	Pleasant	11	H. Hartman	1	Clinton	Dry
Logan Gas	Athens	Carthage	5	A. J. Russell	1	Clinton	1½MGas
Preston Oil	Hocking	Starr	35	F. J. Clack	4	Clinton	Dry
Ohio Fuel	Hocking	Benton	18	Solliday Motor	1	15-foot	Dry
Ohio Fuel	Vinton	Harrison	2	L. O. Burt	2	Clinton	Dry
Ohio Fuel	Athens	Rome	19	Nesh Baker	3	Stray	1MGas
Preston Oil	Knox	Harrison		Isaac Hays	13	Berea	4
Sperry et al	Knox	Clay	24	Hughes	1	Berea	Dry
Apple et al	Knox	Harrison	23	Mary McKee	21	Berea	5
Logan Gas	Medina	York	15-16	Levi Stone	3	Clinton	¾MGas
Logan Gas	Ashland	Hanover	17	Geo. Hamm	1	Clinton	¾MGas
Logan Gas	Ashland	Orange	5	M. Percival	1	Clinton	½MGas
East Ohio	Holmes	Hardy	23	Jacob Uhl	1	Clinton	50
East Ohio	Holmes	Hardy	22-11	J. Uhl & Sons	1	Clinton	30
East Ohio	Holmes	Hardy	24	D. R. Anderson	1	Clinton	60
Vail Oil	Medina	Chatham	7	C. G. Chapman	2	Clinton	¾MGas
Ohio Fuel	Knox	Brown	5	E. R. De Long	1	Clinton	¼MGas

WEST VIRGINIA

Owner	County	District	Farm	Well No.	Sand	Prod.
Ira Sayer	Kanawha	Londen	E. Bradford	2	Berea	Dry
Owens B. & M. Co	Kanawha	Cabin Creek	Marmet Coal Co	16	Weir	Gas
Carnegie Gas Co	Marion	Mannington	F. M. Wilson	1	Gordon	Gas
W.Va.Central Gas Co.	Braxton	Otter	D. S. Engle	1	Big Injun	Gas
Heck Oil Co	Roane	Reedy	Stewart Hrs	1	Berea	10
Hope Nat'l Gas Co	Ritchie	Union	J. M. Lowther	1	Big Injun	Gas
Hope Nat'l Gas Co	Ritchie	Union	Albert Smith	1	Big Injun	Gas
Hope Nat'l Gas Co	Ritchie	Union	S. Hickman	1	Big Injun	Gas
Carnegie Gas Co	Ritchie	Union	A L. Britton	2	Gantz	Dry
Hope Nat'l Gas Co	Marion	Mannington	J. L. Hays	5	Fifty foot	Gas
Warrior Oil Co	Ritchie	Grant	H. S. Wilson	11	Salt	3
Phila. Gas Co	Harrison	Clay	Isaac Patrick	1	Big Injun	Gas
Mfrs. L. & H. Co	Wetzel	Center	Wm. Knapp	2	Big Injun	Gas
R. S. Monroe & Son	Doddridge	Greenbrier	E. Farris	3	Gordon	15
Owens B. & M. Co.	Marion	Paw Paw	J. Musgrove	1	Fifth	Gas
Richard Elkins	Roane	Geary	W. G Caper	9	Salt	Gas
Ross Bros	Ritchie	Union	N. Cunningham	1	Big Injun	Gas
Carnegie Gas Co.	Ritchie	Union	Chas. Ward	4	Big Injun	10
O. C. Satterfield	Ritchie	Grant	Robt. Chalfant	1	Squaw	Dry
Hope Gas Co	Ritchie	Union	Roy Bee	1	Big Injun	Gas
Hope Gas Co	Ritchie	Union	J. T. Hall	1	Big Injun	Gas
LeadingCreekO.&G.Co	Lewis	Freemans C'K	S. Lamb	1	Big Injun	Gas
South Penn Oil Co	Marion	Mannington	L. Freeland	1	Big Injun	4
Chemical Oil Co	Calhoun	Sheridan	Miller Heirs	1	Salt	3
B. E. McCutcheon	Tyler	Ellsworth	B. Spencer	1	Maxon	3
Southern Oil Co	Calhoun	Sheridan	Baker Baughman	1	Big Injun	Gas
South Penn Oil Co.	Gilmer	De Kalb	J. J. Hardman	2	Big Lime	Gas
Smith & Warner	Lewis	Freeman's C'K	L. M. Bailey	1	Big Lime	Gas
LeadingCreekO.&G.Co	Lewis	Freemans C'K	S. Kidmore	1	Big Lime	Gas



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Second Pay In Pilot Area Continues To Be Active

By Special Correspondent

LEXINGTON, Ky., Dec. 30.—The completion during the past week of the new pipe line of the Great Southern Refining Co. from fields in Estill county to the Pilot field, where the Southwestern Petroleum Company has been active in the second pay was practically the only work accomplished in the Estill, Lee and Wolfe county fields. Several small wells are expected in this locality during the next several days.

A 40-barrel well was brought in on the Lucy Watkins lease near Beattyville, in Estill county, by J. H. Sallee in the same locality Miles Brothers have an eight-barrel pumper on their Miles-McIntosh lease.

In the Red Bush section of Johnson county, where considerable activity is being shown, R. G. Gillespie and associates recently completed two substantial producers. These are No's. 2 and 3 Darius Conley, good for 25 and 15 barrels respectively. No. 1 Lee Kimbleton, drilled in by the same firm was a duster. Two other wells are reported from the same territory. They are No. 1 Noah Williams, the property of J. E. McIntyre, estimated at two barrels, and No. 1 H. S. Franklin, drilled in by George and Touman, which is reported to be making five barrels.

A decided increase in the production of crude oil from estern and western Kentucky fields is noted during the past two weeks, according to the report of the Cumberland Pipe Line Co. The runs for the week ending Dec. 16 totaled 81,570 barrels, as compared with 78,764 barrels the week before, a gain of nearly 3,000 barrels, while the total for the week ending Dec. 23 was 84,000 barrels, an increase of more than 3,500 over the previous week.

The Petroleum Exploration is drilling several wells in the Pilot district north of the Miller-Prewitt Goff lease of Lee county. The E. W. Wireman well, located about 1,200 feet east of the Petroleum Ex's Coleman farm of 40 acres and about 300 feet west of the John Kinser lease was dry through the sand. This farm lies about a quarter of a mile north and it is believed that the casing will be pulled and water plugged off in an attempt to make the top pay a small producer.

A top pay producer estimated at 25 barrels has been drilled in one the George Mullin farm about half a mile east of the Robert Martin lease and near the Coleman Hall lease. Three small top pay producers have been drilled recently on the John A. Rogers farm about one and a half miles north of Pilot. On the William Willis lease a dry hole in the top pay has been drilled through the salt water, cased and is now nearing completion in the second pay.

On the Stump Cace branch of Red River, in the same territory on the J. W. Hall farm, W. D. Dukate and others have just completed a dry hole through the sand. This well is located in on Irvine fault area, and the sand that was passed was poor and contained no salt water.

The Superior Oil Corp. drilled a dry hole on the William Townsend half a mile east of the Petroleum Exploration P. Y. Drake lease in the Pilot district.

E. W. Hupp has completed in the second pay a well of questionable size on the James Mullins farm in this district. This well has not been pumped enough to give any information as to what it will make, but it is thought that it will be a small producer.

In Owsley county, five miles south of Beattyville, Combs Brothers, who recently drilled a well on the A. J. Combs farm to a depth of 1,290 feet, which now stands with 800 feet of oil in the hole, have begun another well 625 feet southwest of the Fred Evans farm. Combs Brothers and the Petroleum exploration are drilling a partnership well on the George Porter farm, one and one-quarter miles southwest of the William Ross acreage.

Montana Oil Tax Is Upheld

HELENA, MONT., Dec. 28.—The State Supreme Court of Montana has upheld the constitutionality of the oil producion tax passed two years ago by the legislature of Montana. This decision was in the test case brought by the Mid-Northern Oil Co., subsidiary of the Midwest Refining Co.

The tax law passed imposed a one per cent tax upon the gross value of petroleum produced in Montana. The Mid-Northern, in its test case, contended that where a company is operating on land owned by the federal government and paying the royalty to the United States, it is, in effect, an agent of the federal government and as such not liable to state taxation.

Gulf Coastal Well Completions, Week Ending Dec. 30.

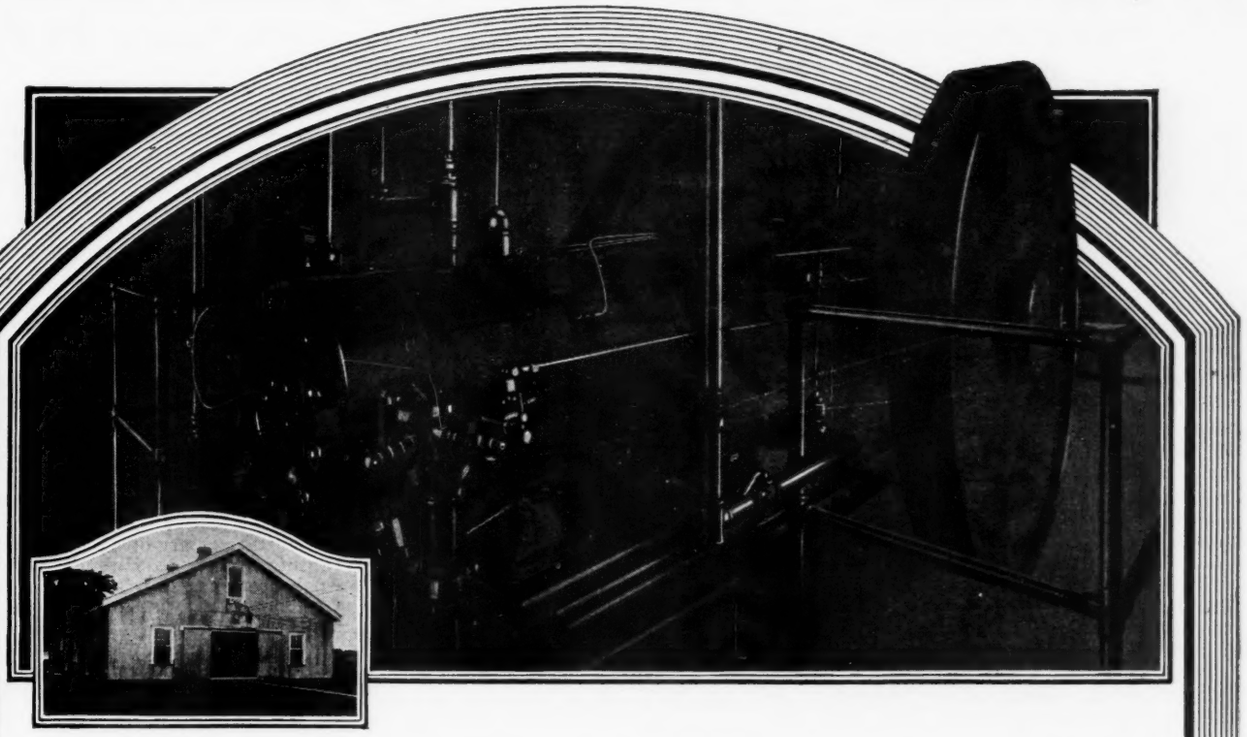
Company	Lease-Well	Field	Depth	Result
The Texas Co.	Gray 18	Vinton, La	2315	Will pump
Lakeview Oil Co	Morrison 28	Sour Lake	1900	75
Sinclair Oil & Gas Co.	Lee 1	Blue Ridge	3820	Dry
Humble Oil & Refining Co.	Carbello 2	Orange	3750	Dry
Amerada Petroleum Corp.	Kishi 2	Orange	3920	1500 thru choke
Orange Petroleum Co	Winfree 4	Orange	3330	Pumper
Humble Oil & Refining Co.	Japhet 33	West Columbia	3175	1000
Gulf Production Co.	E. J. Eyres 2	West Columbia	150	Drilling deeper.
S. R. Buchanan	No. 64	Batson	1350	50
Unity Oil Co.	McFadden 80	Spindletop	960	75
Wilson-Broach Oil Co.	Joint 4	Spindletop	735	30

Production And Disposition Of Mexican Crude

TAMPICO, Dec. 28.—Daily average production in the Southern District of Mexico is shown for the week ended Dec. 14, last, in the sub-joined table. Under "owned" production is carried the oil actually produced by the operating company. Under the heading of "purchased" oil is shown the daily average quantities of crude produced and delivered by smaller operators to the larger interests named. Pipeline transfers from one principal company to another (such as would represent receipts and deliveries) are not included, the combined tabulation being made up with the idea of showing only production rather than deliveries in a pipeline sense.

Company	Amatlan	Tepetate Casiano	Toteco Cerro Azul	Chinampa	Zacamixtle	Potrero-Alazan-Cerro Viejo	San Gerónimo Chiconcillo	Chapapote Nunez-Tierra Blanca	Totals
(Owned)									
El Aguila	25999	309	.....	....	...	27755	3291	.....	57,354
Agwi	13048	...	.....	....	...	.....	....	.....	13,049
Continental-Mex	.....	...	.....	79	...	.....	....	.....	78
La Corona	1653	...	.....	....	647	.....	1968	.....	4,268
Cortez-Atlantica	796	481	.....	....	...	.....	....	.....	1,277
International	.....	...	9744	....	...	.....	....	.....	9,744
Huasteca	.....	...	52000	....	...	.....	....	60000	112,000
Metropolitan	3740	...	.....	....	...	.....	....	.....	3,740
Mexican Gulf	2495	...	25941	....	62	.....	....	.....	28,428
Transcontinental	4860	...	.....	182	11	.....	....	.....	5,053
The Texas Co	.....	...	.....	1162	...	.....	....	.....	1,162
Sub-Total	52521	790	87685	1423	720	27755	5259	60000	236,153
(Purchased)									
Agwi	144	...	.....	....	52	.....	....	.....	196
Continental-Mex	518	...	.....	348	...	...	188	.....	1,054
La Corona	731	...	.....	....	13	.....	....	.....	744
Cortez-Atlantica	387	...	.....	346	...	.....	484	.....	1,217
Metropolitan	522	...	.....	....	...	.....	....	.....	522
Mexican Gulf	78	...	.....	316	...	.....	...	.....	394
Transcontinental	.....	...	.....	100	...	.....	....	.....	100
The Texas Co	4471	...	.....	....	...	.....	....	.....	4,471
TOTAL	59372	790	87685	2533	785	27755	5931	60000	244,851

(Note—Panuco district heavy oil production now totals roundly 165,000 barrels daily.)



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New "Deepest" Well Flows 3000 Barrels, 26 Gravity

By Special Correspondent

LOS ANGELES, Dec. 30.—Since last report from Huntington Beach field the Amalgamated Oil Co. has registered some surprising figures, both in amount of production from new wells and the depth from which the oil is coming. Within five days the company brought in three 3000-barrel wells, one of which, the Miley-Keck No. 19, is today the deepest producing oil well known of anywhere, as the oil is coming from a depth of 4942 feet and 900 feet of oil-bearing formation. The gravity is 26.

The next well, Pearce No. 4, is flowing the same gravity oil from 4816 feet with 1100 feet of sand, and the third, Pearce No. 3, is flowing from 4700 feet, the oil-bearing formation is 580 feet and the gravity is also 26. During the same period it added a fourth, which is not, however, so sensational. This is the Pearce No. 6, making 1000 barrels of 25 gravity; the depth is 3659 feet with but 270 feet of oil sands. It was good enough to bring a total of 10,000 barrels a day in so short a time. But this production is at present too much and so there has been some pinching done.

The Pearce No. 4 has been held down to 1000 barrels; Miley-Keck No. 4, which came in at 4634 feet less than three months ago starting off at 2650 barrels has been pinched to 1100 and Pearce No. 4 has had its flow cut from 3000 to less than 1000. Having reason to expect heavy yield from Fowler No. 5, drilled to 4845 feet, and Pearce No. 2, drilled to 4945, work has been temporarily suspended and attention given to building additional storage and increasing pipe line facilities to meet the increased production. When the latter work is completed the suspended drilling will be resumed and the producing wells will be opened up.

Another result of deep drilling in this field was shown in Porter No. 2, belonging to the M. H. Mosier Special Syndicate. This well, on being deepened from 3500 to 4400 feet, is now makng 2000 barrels of 27 gravity instead of 250 barrels of a lower gravity.

The total production of the Huntington Beach field at the end of last week was 81,500 barrels per day from 412 wells, and the value of the oil $59,500. The highest gravity is 31; the lowest 13, making the field average 22.1. There were 108 wells drilling.

With a showing of oil at 2000 feet, secured by the Cal-Petro Co. at Bellflower, a wildcat territory a few miles west of south from Santa Fe Springs there is considerable interest evidenced in that district. Some oil men, however, say the showings are the usual tar surface, while others say they are excellent, and that structurally Bellflower is the next oil field in California. It is said that at 2035 the oil showing in the Cal-Petro was quite pronounced and at 2085 drilling was stopped and casing set. In another week when the cement is drilled out the tale will be told.

The Pan-American Petroleum Co Pasadena No. 2, in the Montebello field, was put on production a few days since and made 75 barrels of fluid, but 80 per cent water. The well had been drilled to 4100 feet. With this bottom water developing, it will be plugged back to 3900 to more thoroughly test out an upper sand.

The St. Helens Riverside Properties, Inc., a subsidiary of the St. Helens Petroleum Co., and operating on a lease at Monterey, near Montebello, has secured in Monterey No. 6 a very consistent producer, for the well has been averaging 2000 barrels a day for several weeks. The oil is 29 gravity, coming from 4300 feet, and rewards the undertaking of seeking a deep sand in that territory of Los Angeles county oil fields.

In the St. Helens Petroleum Co. Mulholland well, close by, however, results have not been so good so far, for, with the hole 4370 feet deep, there is considerable trouble in locating the point of entry of water. The same company's Eggleston No. 1, in which the casing collapsed about a year ago when it gave promise of being a heavy producer, is now on production and making 500 barrels daily of 29 gravity from 4300 feet.

Persistency, carried on for about three years, accompanied by the expenditure of many thousands of dollars, is about to reward the Arcadia Oil Co. with a producing well for its wildcatting in the northeast section of the Montebello field. The cement plug was drilled out a few days ago and as soon as the water shutoff is approved the bailer is expected to show the hoped-for results. The company is composed of San Diego investors.

Possible New Pool Found In Defiance County, Ohio

By Special Correspondent

FINDLAY, Jan. 1.—Completion of a test well in a territory considerably removed from previous production in Highland township, Defiance county, featured the week's oil field developments in the Lima field. The well, belonging to Charles M. Gish and drilled on his own farm, came in as a 60-barrel producer, but later dropped off to 10 barrels a day. It is 1555 feet deep.

A few other completions were reported from the Lima field, but the number is somewhat smaller than usual due to the setting in of the winter season. Wood and Allen counties furnished the best of the new wells.

The Illinois field reported one of the best producers in some time, when the Central Refining Co. brought in a 90-barrel well in Honey Creek township, Crawford county. Smith and others obtained a 10-barrel well in Dennison township, Lawrence county.

More Clinton Sand Pools Seem To Be In The Making

Staff Special

COLUMBUS, O., Jan. 1—The Clinton sand territory in Licking county continues from time to time to yield good wells. The Edward H. Everett Co. last Thursday brought in its No. 3 John J. Simpson, in Hanover township. It was rated at better than 100 barrels a day. In the same locality I. I. Hazlett & Co. got a 60-barrel well in No. 3 J. S. Armstrong.

The Pure Oil Co.'s well on the Luella Shaw, northeast of Irville, in Licking township, Muskingum county, is holding up well. This test was drilled into the Clinton in October, showing approximately one and one-half million feet of gas. It was shot late in December and started off at 153 barrels. This is an extension of about a mile to the east of the old Black Run field.

Considerable attention is being paid the northern part of Coshocton and the southern part of Holmes county. In Coshocton, the Pure's well on the R. J. Graham, in Clark township, is flowing an average of 25 barrels daily of 46 gravity oil. When drilled into the Clinton, found at 3400 feet, the well showed for one million feet of gas and made several natural flows of oil. After the shot it sprayed about 50 barrels of oil daily for a time. The sand is hard, but is about 65 feet thick and there is reason to believe that a good pool will be opened up. The territory is held largely by the Pure, Logan Natural Gas & Fuel and Medina Natural Gas companies.

CASPER, Jan. 3.—Schuster Brothers have sold out their minority interest in the Omaha Oil Refining Corp. to E. T. Williams and E. J. Sullivan. It is reported that Schusters will lay a 4-inch line from the Salt Creek field to Casper and ship crude from their lease to a new refinery to be built by them at their home in Joliet, Ill.

TULSA, Dec. 30.—E. B. Marlow, former representative of the Sinclair Crude Oil Purchasing Co. in the Mexia district of Texas, has been selected as vice president of the company to succeed Henry L. Phillips who is to become president of the company on Jan. 1. Mr. Marlow has moved to Tulsa and is ready to assume his new duties next week.

OKMULGEE, OKLA., Dec. 30.—Two more stills of the J. W. Coast pressure type are being installed in the Empire refinery here. Three stills of this type had previously been in service.

Completions in Northwestern Ohio, Week Ending Dec. 30.

Darke County				
Hance Bros.	No. 3 Sec. 7	Allen twp.	George Gerlock	15 Bbls.
Ottawa County				
Magsig et al	No. 2 Sec. 24	Clay twp.	J. Langerman	4 Bbls.
Zorn-Hornung	No. 1 Sec. 20	Harris twp.	George Clay	5 Bbls.
Mercer County				
Neeley and Colt	No. 1 Sec. 28	Gibson twp.	J. Frommel	1 Bbls.
Central West Oil & Gas Co.	No. 1 Sec. 28	Gibson twp.	J. Smith	10 Bbls.
E. A. Kuhns	No. 2 Sec. 6	Union twp.	A. Archer	5 Bbls.
Sandusky County				
Sun Company	No. 1 Sec. 32	Scott twp.	Geo. Baker	Dry
May Oil Co.	No. 3 Sec. 2	Jackson twp.	A. Humler	5 Bbls.
Heiset Oil Co.	No. 1 Sec. 4	Jackson twp.	A. Wilhelm	3 Bbls.
Allen County				
Ohio Oil Co.	No. 10 Sec. 13	Spencer twp.	M. Suever	14 Bbls.
Hancock County				
Keiser & Reimund	No. 12 Sec. 12	Union twp.	H. Gantz	12 Bbls.
Wood County				
Progressive Oil Co.	No. 8 Sec. 26	Plain twp.	Case and Case	30 Bbls.

Defined Structures Taken Up Across Rio Grande From Laredo

By Paul Wagner
STAFF REPRESENTATIVE

HOUSTON, Dec. 30

ENTRANCE of the Humble Oil & Refining Co. into the Guerrero district through the purchase of approximately 50,000 acres of wildcat leaseholds adds a third interest to the the Rio Grande from the Laredo district of Texas. The acreage on the Mexican side is located on three defined structures in the states of Tamaulipas and Nuevo Leon.

The Humble, which capitalized its subsidiary Tamaulipas Petroleum Co. for 1,000,00 pesos, acquired its leaseholds from the Panuco Production Co. which retains similarly extensive acreage. The other large owner of Guerrero district acreage is the Empire Gas & Fuel Co., (Henry L. Doherty & Co.) which operates in the Panuco field of Mexico as the National Petroleum Co.

Whether testing operations will go ahead with facility in this territory depends perhaps upon internal conditions in the Republic of Mexico, especially as regards the government's attitude toward foreign development. Regardless of such contingencies, however, the original leaseholds in the Guerrero district were taken comparatively recently and they cover a term of 30 years. The result is that the properties can be held for an indefinite period awaiting propitious development conditions, should this prove necessary.

The properties are located on and around what are known as the Guerrero, La Lajilla and Tanque-Barreta structures. The area includes a strip of country into which Texas formations extend and which is located on the south side of the Rio Grande; from a point opposite San Ygnacio, Texas, to a point east of the town of Guerrero. The western limits of the area may be considered as a line drawn from San Ygnacio to Las Tortillas, thence to the town of Cerralvo. Southeastern limits are from Cerralvo to a point of the Rio Grande, east of Guerrero.

Virgin Area for Testing

No oil production exists either in or around the area on the Mexican side. Across the Rio Grande, in Webb and Zapata counties, Texas, some 30 to 40 miles, production in the Mirando development comes from the Yegua geological horizon. This will have no bearing upon Guerrero district production, however, as the Yegua has been entirely eroded away or it is exposed at the surface.

Since these and other formations penetrated in Webb and Zapata counties have been eroded away or they outcrop in the Guerrero region, it is to the deeper-lying beds on the Texas side that interest attaches in Mexico. A deep test well drilled to the levels of the Midway and Wilcox formations in Zapata county would be of importance, as these formations underlie the Guerrero structure.

Surface exposures in the Guerrero region consist of formations of Tertiary and Cretaceous age. A generalized section based upon gelogical authority follows:

The basal Tamasopa limestone which outcrops in the mountains to the west and southwest, have been the main oil bearing horizon in the Panuco and Southern district fields in the state of Vera Cruz. It extends practically the whole length of the Republic and it may serve as a source of supply for oil in the northern Tamaulipas-Nuevo Leon region. No such igneous intrusions as affected accumulation of petroleum in Vera Cruz, however, are found in northern Tamaulipas.

Character of Structures

Depth to the Tamasopa in the Guerrero region is approximately 2700 feet and to the overlying San Juan beds the depth is roughly 2000 feet. A belief that the San Juan or the Tamasopa will be sufficiently porous to act as an oil reservoir is based upon the fact that the fold is an extreme asymmetrical anticline in the case of the La Lajilla structure, where the southwest block of acreage shown on an accompanying map sketch is located. It becomes almost an inclined fold, according to geological authority, which takes the position that this extreme folding must certainly have greatly fractured these formations; thus inducing a high porosity, sufficient to carry oil in large quantities.

GENERALIZED GEOLOGIC SECTION

Age	Formation Name	Thickness	Character of Rocks
Tertiary	Alluvium	10-100	White, firm sandy soil.
Tertiary	Reynosa	10-100	Conglomerate of blue limestone pebbles
Tertiary	Frio	600	Gray and green clays with sands (not exposed in this area, but further to east).
Tertiary	Fayette	600	Greenish sandy clay, lignite clay (not exposed in this area but further east).
Tertiary	Yegua	1400	Some yellow to brown clays, brown and greenish sandstone.
Tertiary	Marine	950	Yellow to greenish clays, brown to red limestones.
Tertiary	Carrizo	500-1000	Light yellow to brown sandstone and sandy shale.
Tertiary	Wilcox	200	Blue to gray sandy shale.
Tertiary	Midway	200	Bluish shale—yellow to brown sandstone.
Cretaceous	Papagallos	1000-1600	Blue shale, fine grained.
Cretaceous	San Juan	600-800	Gray limestones and shales.
Cretaceous	Tamasopa	3000	Massive gray limestone

The La Barreta anticline extends through parts of Porcion 62, the Lorenzo Gonzalez tract, the Narciso Garcia tract, the M. Vela Ramirez denunciation, San Rafael and La Barreta. The accompanying sketch map shows this structure about seven miles north and east of Las Tortillas, a small town on the Rio Salado, in the state of Tamaulipas. The roads from Guerrero and Nuevo Laredo traverse the western side of the structure.

The surface formation on the Tanque-Barreta anticline is described as an 18 foot sandstone, 300 feet above the base of the Carrizo formation, or the top of the Wilcox formation where there is a 30 foot sandstone; coarse grained and very regular in thickness. This is the first sand described as favorable for the accumulation of oil. Below this 370 feet, a 20 foot sand exists in the Midway formation. The sand in either of both of these formations is described as favorable for oil and gas in sufficiently large quantities to serve as fuel for deeper drilling. Failing to encounter oil in commercial quantities in either of these formations, the San Juan or Tamasopa formations are the next prospective horizons at 2200 and 2900 feet, respectively, in this part of the general region.

The Guerrero anticline, the location of which is indicated by the "hatched" division of acreage in the lower right hand part of the accompanying map, is about eight miles south and 20 miles west of the town of the same name. The anticline takes in most of the property El Soldadito, San Francisco, southern half of Amesquita and the central part of Botello. The state line between Tamaulipas and Nuevo Leon passes over the southern end of the structure. Zapata, Texas, which is nine miles from Guerrero, is the closest American town.

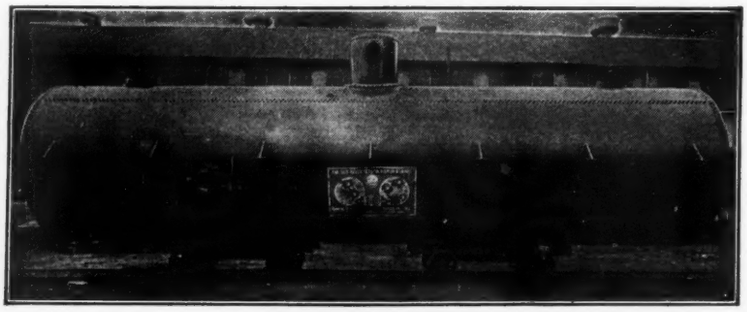
This anticline, which is the largest and most pronounced fold in the region, carries the Midway and Wilcox formations, which probably should be encountered at 1200 feet and 1500 feet below the surface. To reach the Tamasopa here drilling probably would be necessary to the 3000 to 3500 foot level.

In this connection, a dug well four feet square and 40 feet deep, exists in the eastern part of the hacienda of San Francisco, on the Guerrero anticline. Originally dug in 1910, it was abandoned later because of peculiar noises encountered. It was at first dry, but later filled up 10 feet with water. This has been continuously agitated since that time by gas which worked into the well.

Transportation and Water

The most accessible towns from this region are Nuevo Laredo, Los Herreras and Los Aldamas. From Los Herreras to Cerralvo, the road was originally built by a mining company and is described as very good. Another good road extends from Cerralvo to Agualeguas via Gral Trevino. It traverses flat country most of the distance and

HAMMOND SPECIFICATIONS



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requires work only at arroyo crossings to put it in condition for heavy hauling. From Agualeguas to Paras and from Paras to Guerrero the roads also are good, except on the edge of the Guerrero anticline where the highway is rough and rocky.

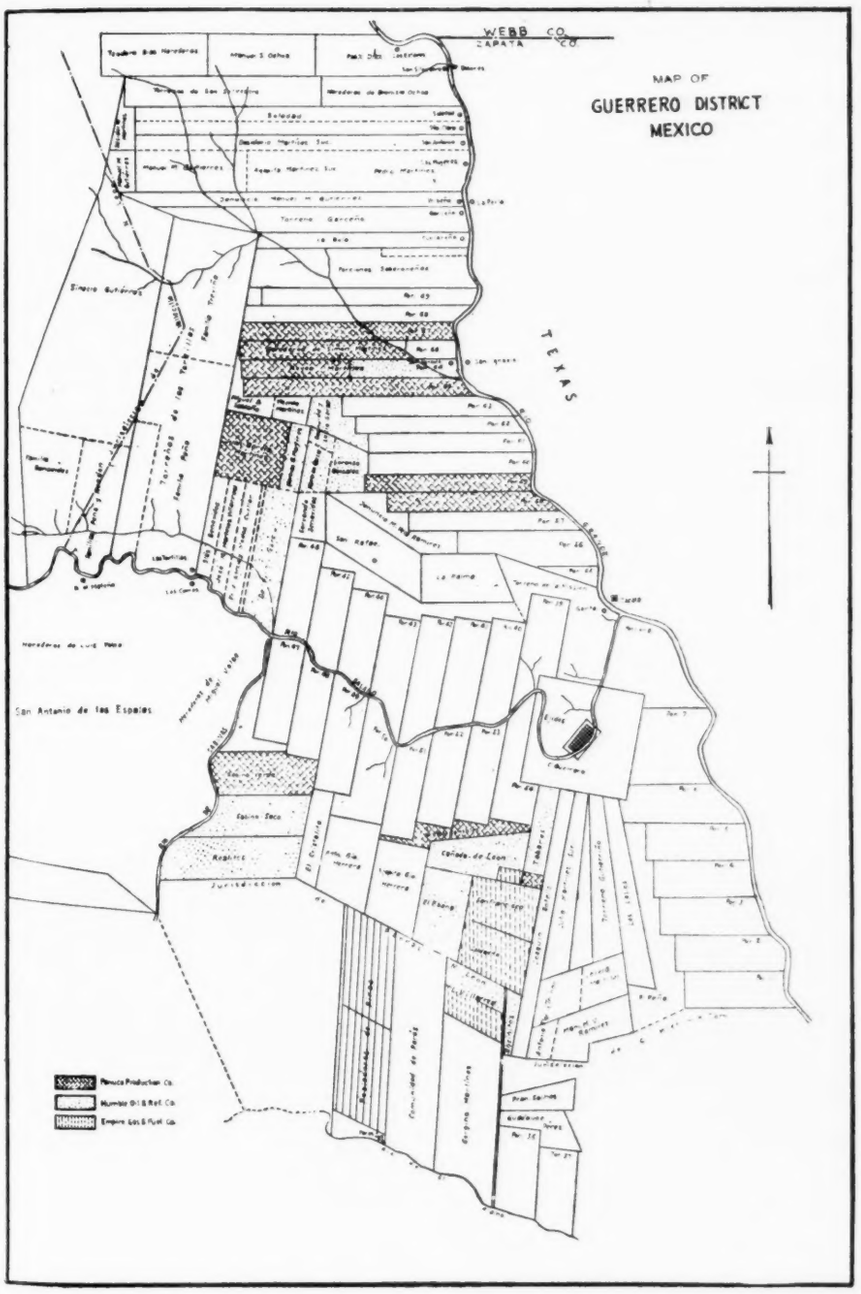
Over most of the area the country is flat to rolling, but to the west it becomes more hilly and finally develops into the Sabinas mountains. The mountain range lies to the east of the Monterrey-Laredo railroad and runs in a northwest-southeast direction. The entire area is drained by the Rio Grande, into which the Rio Salado, Sabinas, Seca and Alamo finally flow. The Rio Salado and the Alamo are the only two rivers which flow the entire year, the Sabinas and Seca providing no drainage except in the rainy season. Both, however, have large water holes the entire year and would play their part in providing water for field development purposes.

Another Line To Amarillo

WICHITA FALLS, Dec. 29.—Contract has been signed for a 14-inch gas line, from the Amarillo gas fields, to the city of Amarillo, according to announcement this week. This is the third line for Amarillo, and is to be built by Denver capital, it is stated.

Opening of a considerable industrial section in Amarillo is expected, because of the bountiful supply of cheap gas. The capacity of the Amarillo field is yet untested. Some of the wells have shown a capacity of 130,000,000 feet, when drilled to the gas sand, and tested. Most of them have been shut down since topping the sand.

TULSA, Dec. 28.—H. A. Lane, engineer for Amerada Petroleum Corp., has been transferred from Ardmore to Tulsa, having finished his work on construction of the company's gasoline plant in the Crinerville field, Carter county.



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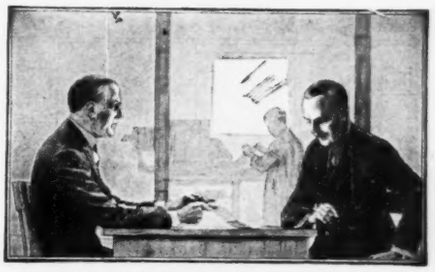

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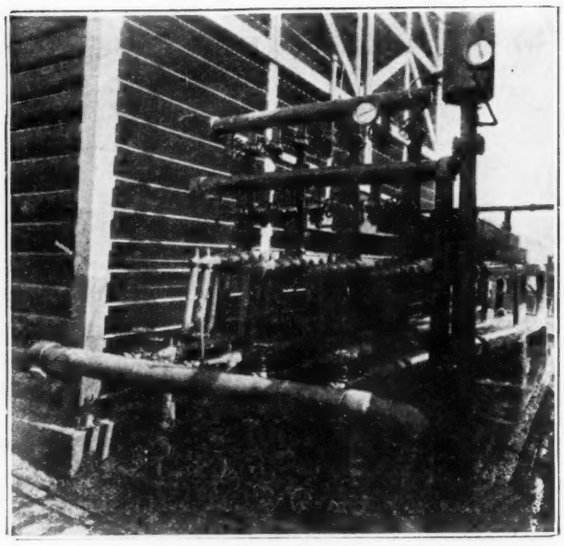

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Families Still Connected With Oil After 50 Years

HOUSTON, Dec. 27.—In the year 1872 "the largest heavy oil producer in the world" had a weekly production of 2000 barrels, according to a copy of **The Petroleum Monthly,** in the possession of Ed. J. Drake, district manager at Houston, of the Continental Supply Co. This record producer of oil at that time was E. L. Gale, Esq., of Parkersburg, W. Va., grandfather of Mr. Drake.

The Petroleum Monthly, Vol. II, No. 6, dated June, 1872, contains as a lead article the story of Mr. Gale's identification with the oil industry and some of his history. This publication was owned, edited and published by J. H. Bowman, of Oil City, Pa., the father of A. M. Bowman, the latter now being chief purchasing agent of the Humble Oil & Refining Co., at Houston.

Friends find it interesting to remark on the continued identification of the Bowman and Gale families with the petroleum industry. The Gale family name, changed by marriage to Drake, carried on first in the refining branch of the industry. Sedwich Drake, son-in-law of Gale, for years operated the old Parkersburg refinery. Later he went into production, and operated in the Virginia fields. Still later he went into business in Parkersburg, only to get back into oil operations again in Oklahoma as a contractor in 1907. There he remained until his death in 1912.

Ed J. Drake, third son, followed the trend of the family and at an early age became identified with the industry as a telegraph operator in the Virginia fields. In 1893 he affiliated with the National Supply Co. as a salesman in Virginia. In 1903 he went to Kansas and Oklahoma for the Oil Well Supply Co., remaining with them as oil engine man and heavy machinery expert until 1912. Then he came to Houston to open the district office of the Continental Supply Co. He has remained here since that time.

Keeping up the contact that his father had established with the industry through publication of **The Petroleum Monthly,** Mr. Bowman also got his first oil country experience as a telegraph operator in the eastern fields. He soon became a crude oil buyer for the Joseph Seep Purchasing Agency at Lima, Ohio. Afterward he was identified with a gas company at Lima, leaving to become purchasing agent at Beaumont, Texas, for the Gulf Oil Corp. subsidiaries.

Later Mr. Bowman took over management of the Southern Well Works and remained with that company until it was absorbed by the Lucey Manufacturing Corp. Purchasing an interest in the Girten Belting & Supply Co., Mr. Bowman left the Lucey people for his own interests. After a time he sold out and affiliated himself with the J. S. Cullinan interests in the Farmers' Oil Co. More recently he has been with the Humble Oil & Refining Co. as chief purchasing agent.

ROSWELL, N. M., Dec. 27.—The Roswell Buffalo Oil Co., of this city, is setting packer at 2210 feet to shut off water and will test gas showing found at that depth. The well will then be drilled deeper. It is believed there is sufficient gas to fire the boiler for further drilling. The test is 28 miles southeast of Roswell, in Chaves county.

Oil Is Civilization Builder In Eastern Kentucky District

By Special Correspondent

LEXINGTON, KY., Dec. 29

ABOUT 25 years ago the New Domain Oil & Gas Co. entered the Lawrence and Johnson county fields. After drilling three wells, the company decided that the fields were not profitable and withdrew from the territory.

Five years previous a well was drilled at Blaine, Lawrence county, about 27 Miles from Louisa by several farmers of the county. As there was no pipe line near here in those days, the oil was hauled to Louisa for shipment. This well caused the New Domain Oil and Gas Company to enter the field.

In the summer of 1916, Captain Blair Alpin, representing several operators, was at Ashland, Ky., looking for leases. He heard of this well and made a trip into Lawrence and Johnson counties. The land owners learned that he was looking for oil land and were eager to lease. When Captain Alpin returned to Indianapolis he had leased 19,000 acres in two counties. This was the start of what is now the Union Gas & Oil, a concern with a present production of 2000 barrels a day.

It was not simply a case of leasing the land, starting operations and watching the oil flow. There were many trials and tribulations before the 2000 barrel production was reached. These fields are 18 miles from the nearest railroad, which means that thousands of dollars are spent annually for hauling over the mountains.

After much hard labor and expense the first rig was brought to these fields, and five wells were drilled before anything but small gas wells were struck. The sixth well showed a production of about 40 barrels, but there was not pipe line to market the product.

The Cumberland Pipe Line Co. was consulted, but would not agree to lay a line until a production of 200 barrels a day was guaranteed.

This was in 1917, after America had entered the Great War. The next problem was that of getting pipe. During 1917, the Union Gas & Oil Co. paid 50 cents a foot premium on a carload of pipe. Finally the 200 barrel production was reached and the Cumberland laid a two-inch line to Blaine and then on down to Martha. Now there is a six-inch line part of the way and two four-inch lines on to Louisa. In bringing the output up to the 200 barrel mark, it was necessary for the company to drill on each farm in order to hold its leases, and this is one of the reasons why three dry holes—edge wells—were struck.

As higher production was reached, other companies came into the fields, and at present these other companies have a total of about 100 wells.

Geologists have pronounced this one of the best fields in the state and estimate that it will have an oil life of about 25 years. There are two Weir sands, which are found about 900 feet from the surface.

The Union has 275 wells on these leases at the present time, with 37 rigs working on new wells. The wells average from 25 to 50 barrels production. Forty power plants are used in the operations, not including the compressor plant for the gas fields. In addition to the oil production, the Union markets 2,000,000 feet of natural gas daily, not including the gas that is used by the employes in operations.

The average depth of the wells is about 875 feet. The following table is a composite of several of the logs:

Soil, 18 feet.
Slate, 50 feet.
Sand, 105 feet.
Slate and shell, 260 feet.
Salt sand, 475 feet.
Slate and shell, 548 feet.
Little lime, 583 feet.
Big lime, 705 feet.
6¼ casing set at 604 feet.
Injun sand, 730 feet.
Ten foot sand, 908 feet.
Slate, 913 feet.
First Weir sand, 915 feet.
Second Weir sand, 997 feet.
Slate, 1022 feet.
Depth, 1,022 feet.

The shooting in these fields differs somewhat from the other fields. Due to the two Weir sands, drillers are forced to shoot through brick.

When oil operations first started in these fields, there was here and there a one-room log house where natives were content to live and earn what small sums they could by odd jobs here and there. If the farmers raised more than they could use, they were forced to let it rot in the fields, seldom finding a customer to take the surplus of corn or other products they could raise on the poor lands. Due to the hilly nature of the country, ten to fifteen acres was considered a good sized farm. After they had planted their crops they went out of the county to earn what they could.

Everything has changed in the six years that the oil companies have operated in these two counties. The farmers who owned land that showed production have prospered. The log houses gradually are disappearing and substantial frame houses have been built, the lumber coming from the sawmill of the Union Gas & Oil Co. Every mule train that comes in from Webbville carries new supplies of clothing from the mail order houses.

The people as a whole are satisfied with the new conditions. Here and there may be found a native that has some objection, but the majority show that they appreciate what the oil companies have done for the country.

It is rather an interesting situation for one who has not visited the fields before. The difficulties that the operators experience in producing the oil are numerous, and the work that is required to keep a tract as large as 19,000 acres going is a man's size job.

While waiting at the Union gas office at Martha recently the correspondent saw three citizens come in, all of whom had complaints to make. The first stated that his corn crop had been damaged. The company representative agreed to pay the loss at the prevailing price of corn. This suggestion was turned down by the land owner, and as a compromise, they agreed to select one man each to estimate the damage.

The second said that he has leased 40 acres to the company and that only six wells had been drilled on his property in the last year, three of which were producing 40 barrels. Six years ago there was no production on his farm and today he is averaging more than 200 barrels daily.

The third land owner complained that his wells were not showing enough production. A close-up on the statistics showed that out of the three wells on his tract, 198 barrels were averaged for the last 30 days. These are some of the many things that a company is forced to contend with in developing a field such as that leased by the Union Gas & Oil Co.

At the present time the Union has under course of construction 80 new dwellings for the use of its employes. During the past year more than 75 homes were completed.

As proof that the company is doing everything in its power to make both its employes and the natives satisfied, it is pointed out that the firm has installed a radio outfit and at the present time is building a moving picture house in which it plans to install the radio.

Running 40 rigs is no small job, and to handle the work, more than 300 men are employed by the company. This number includes the teamsters, who are busy hauling supplies from Webbville, the closest railroad station, to the fields.

The country runs from 1200 feet above the sea level down to 700 feet. It requires a large cattle train to haul the heavy rigs over the field, and while here the writer watched 20 yoke march up to a new site pulling a rig for another drill.

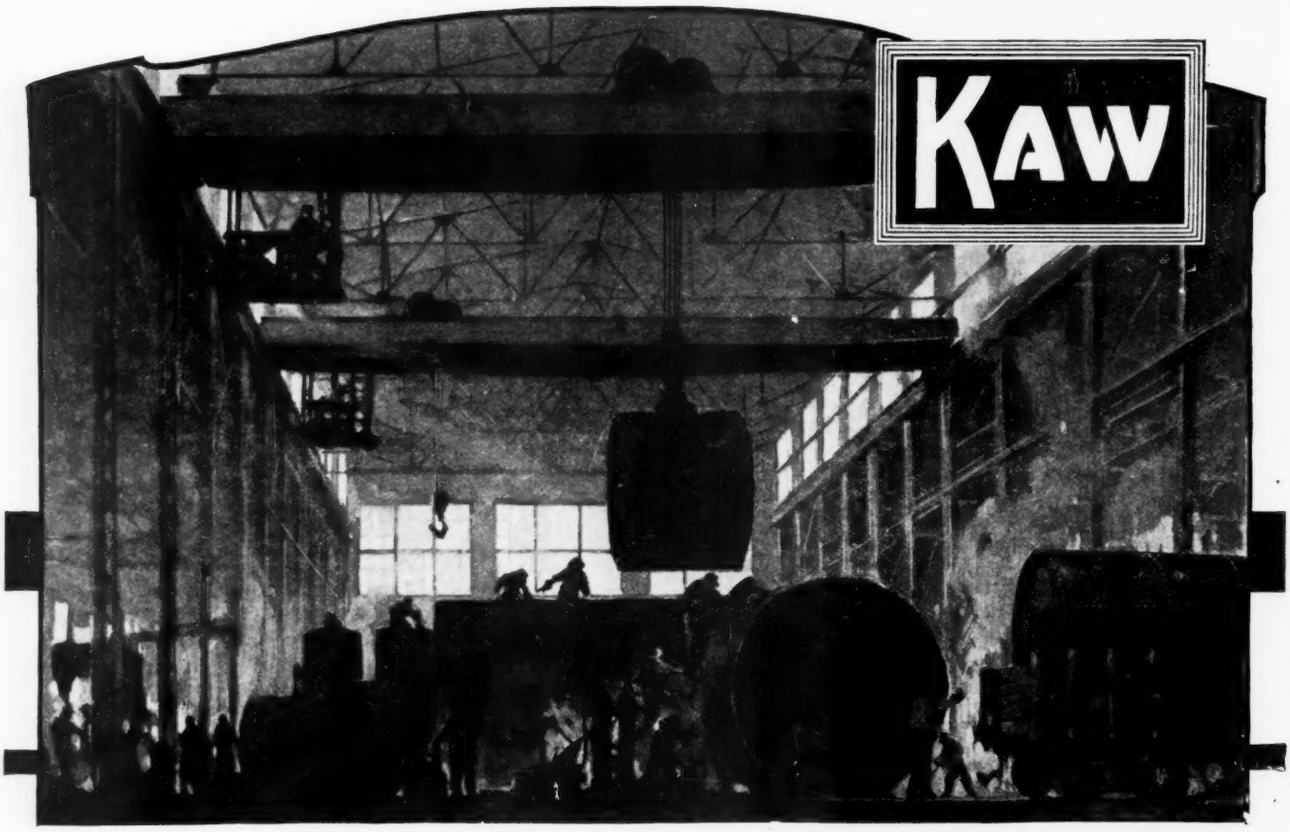
The company is trying the deep pay and at this time is drilling on a well that has already reached the 2,300-foot mark. A good well was struck in the second Weir sand, but this was cased off.

Over 300 wells have been drilled on the Union leases and by next fall they are expecting to add nearly a hundred more. The next job to be completed is the four tool houses, which are under construction. When completed they will enable the company to have on hand more than a month's supplies at one time. This will be a big help, for the heavy fall rains already have worked havoc with the roads and the writer is told that sometimes during the winter, the mail is delayed for five days at a time.

If the Ford coal land deal goes through, it will mean much to the eastern Kentucky oil fields for it probably will result in the construction of a new road from Webbville through the Lawrence and Johnson and Magoffin county fields, probably ending at Paintsville, which will mean two outlets for the natives and their supplies.

However, at present they will have to content themselves with the mud and creek bed roads, which are now almost past fording.

PORT ARTHUR, Dec. 28.—Four employes of the case and packing department of The Texas Co. refinery were killed when the automobile in which they were riding was struck by a Port Arthur street car, Dec. 20. They were Emile Chaisson, Gerald H. Delano, Patrick H. Delano and Mrs. Amanda Morreaux. John Hartman, another employe, was slightly bruised.



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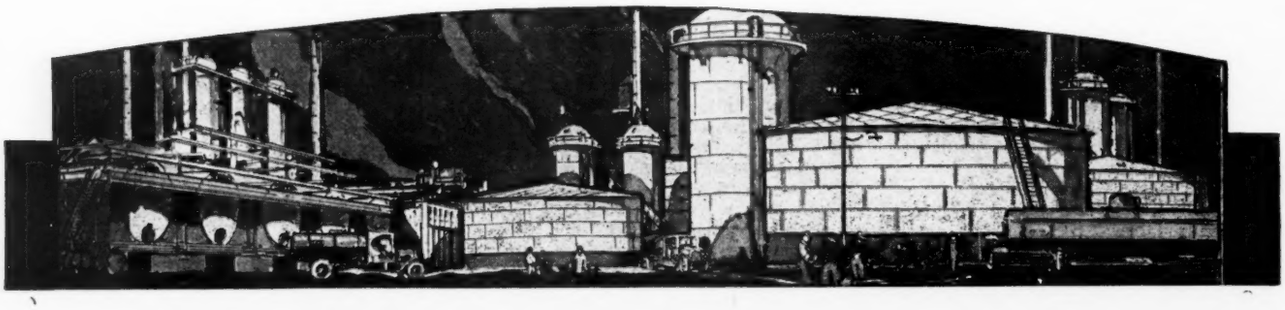


Some Fundamentals To Be Observed In The Cementing Of Oil Wells

By F. B. Tough
U. S. BUREAU OF MINES

Mr. Tough, chief petroleum technologist of the U. S. Bureau of Mines, on Dec. 7 at the meeting of the American Petroleum Institute at St. Louis read before the group meeting on standardization and improvement of oil well drilling methods, a paper on "The Cementing of Oil Wells", of which the accompanying is a part. The matter omitted from this publication is the explanation by Mr. Tough of the slides he used to illustrate his discussion. This has been summarized by the editor. The illustration used in this paper, showing the laboratory tests on weakening of cement by varying quantities of water, is taken from the "Report of Operations, Rocky Mountain Petroleum Association", published this summer under the direction of Mr. Tough, who was engineer in charge of the work of that association.—Editor.

THROUGHOUT this talk in speaking of cement I refer to a mixture of Portland cement and water, without the use of sand or rock. Of course, there are places where sand and rock have been used in oil wells with some success, but I should not recommend it. In developing the technique for cementing oil wells we have had to overcome and to meet difficulties that do not confront us in the use of cement in any other structural purposes.

For example, the cement must be mixed half a mile or more from the form into which it is to be cast. This form is out of sight, down 2500 or 3000 feet or more in the earth, and it must be reached through a tube varying from 4¼ to perhaps 10 inches in diameter. This form in itself is a tube, thin as far as the wall is concerned with respect to its length, and as to the thickness of wall varies from nothing from the points where the casing is in contact with the wall of the holes to several inches elsewhere. Obviously those are difficult conditions to meet.

Perhaps the serious handicap under which we have operated in the use of cement in oil wells has been our inability in a majority of cases to make anything like a satisfactory study of the cause of failure. Suppose we cement a well and the water is shut off. It is a good job as far as that is concerned. It may be good due to the formation and the cement perhaps has had nothing to do with it. On the other hand the water may not be shut off, and yet the cement may have set. Perhaps it was not put into the right place. Perhaps the cement was properly mixed, and put in the right place and the hole was not in the right condition. There might have been agitation from water or gas; if the water is not shut off the cement is blamed for it.

Successful Cementing

Under these conditions one might ask "why cement at all"? There are a number of cases where the mechanical condition has been such as to prove beyond a question of any reasonable doubt that the cement has set and has done effective work. For convenience they may be grouped into three headings, the first being bottom hole work. That is in exclusion of bottom waste or undesirable sands of other kinds. Another is the exclusion of top water where a casing has frozen, but where circulation has been established, and the cement has been pumped back to stop up the circulation course. Doubtless a few of you know of those cases where the cement is the only thing that could have done the work. A third and important case is where an oil sand and water sand have been cemented behind the same string of pipe and later developments have made it advisable to go back and perforate the pipe opposite the oil sands. There are a number of such cases where oil wells have been developed free from water, showing the cement had made a seal between the pipe and the wall of the hole at some point above the oil sand and below the water sand. Clearly, such cases as these demonstrate that the cement will set.

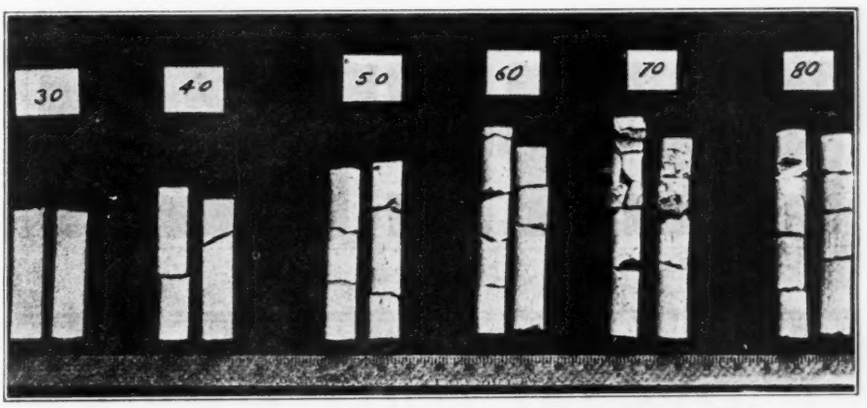
The experienced operators will often give another reason for the use of cement and that is that it will tend, we believe, to fill some of the irregularities in the hole, and thereby have a tendency to prevent the formation from sloughing in against the pipe and causing it to collapse. The cost of a cementing job compared to the cost of the well is very slight, and many operators believe it is good insurance to their investment to do everything in their power to make that string of pipe or the bottom hole job, as the case may be, when completed, as permanent a fixture as possible.

Conditions for Cementing

There are a few fundamental conditions which, if regularly maintained in the cementing of wells, will, I believe, considerably increase our batting average. The first that I would give consideration to is the condition of the hole. The mere fact that you can measure a hole to a certain depth does not mean that it is in condition to cement. The circulation should be as free as possible, and every reasonable precaution should be taken to preclude the chance of agitation when the cement is placed, because if agitated by the circulation of water, movement of gas or oil, we all know that the cement will not take a proper set. Where practicable, that is, where cable tools are used, it is to be recommended that a section of the hole, perhaps 10 or 15 feet in length, be underreamed immediately above the tight hole usually drilled as a set for the casing shoe. I have known cases where as much as 50 or 60 feet of the hole have been reamed. I do not recommend this, for if you have your casing centered with the underreamed portion you get that section 10 or 15 feet long, where the casing will probably not be in contact with the wall of the hole at any point, and that gives you that good slug of cement which is worth far more in the well than a great many more times that amount of cement scattered haphazard along the hole.

If you are dealing with water in the well that is highly mineralized, frequently it is not feasible to hold up the game for a chemical analysis. In that case, a rough test with the cement you are going to use or plan to use, and the water will often give some interesting results. When in doubt I would suggest the use of a little lime, preferably a hydraulic lime mixed into a cream and pumped in ahead of the cement. In working with rotary holes, there is a considerable advantage gained in thinning the mud ahead of the cement. It has been found that five or 10 barrels of clear water pumped in ahead of the cement (I don't mean circulated in the hole for any number of hours, but pumped in ahead) is a good plan.

This brings me to the question of what is a proper mixture of cement. The ce-



Editor's Note:—As the latter part of his talk, Mr. Tough showed a number of slides illustrating tests he had made with various mixes of cement, and also giving diagrams of recommended pump and water connections and arrangement.

The first series of slides showed experiments made in pumping cement made with a mixture of 40 pounds of water to 100 pounds of cement into mud fluid of various consistencies. These tests were made in glass tubes representing the wall of the hole, with a small piece of pipe inside to represent the casing. These slides brought out graphically the sharp separation made between the mud and cement when the former was of about 1.15 specific gravity, and showed channelling and streaking when heavier mud was used.

The next series (a similar one being shown herewith) showed a series of glass tubes containing cement made with varying amounts of water to the same amount of cement, 100 grams of cement being used in each case. These showed that there is a certain amount of differential settling where too much water is used, the coarser particles settling to the bottom while a chalky mixture is formed on top. After allowing the cement to set for about 30 days, the tubes were broken in order to test the various samples for hardness and to find the amount of chalky deposit on top of each slug. The 40-mix showed the best and strongest cement, with the least amount of differential settling. The slugs made wih 70—and 80-mix crumbled into small fragments when the tubes were broken, the cement being in thoroughly rotten condition.

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ment manufacturers have done a great deal of careful work in developing special cements for oil well purposes, and they have turned out some fine grades of cement. Of course, they cannot be responsible for cases where the cement has been allowed to come in contact with moisture. For that reason I would recommend that any time you find a sack of cement with a considerable amount of large lumps in it, discard the whole sack. I have found that a quarter-inch measure works easily; it is easier to get the lumps out when they are dry than when they are stuck under the valve of a pump.

One thing that is generally overlooked, and is one of the simplest things in connection with the cementing work, is the amount of water to be used. It has been developed by experiments. We will dwell on the fact in a few minutes, that cement is frequently killed by the addition of too much water. Thirty pounds of water to a sack of cement will make a mixture you can work with a trowel. That is too thick for ordinary manipulation in a well. Forty pounds of water to the sack makes a thick mixture, one which can be pumped providing it is thoroughly mixed, and there are no lumps in it. That much water tends to weaken the cement, nevertheless a mixture of 40 pounds of water in a sack of cement is stronger, usually, than the formation with which it comes in contact, so I would set that as the maximum of water to be used, and it should not be guessed at. There is too much guess work.

Avoids Quick Setting

There are one or two advantages of this excess amount of water over and above the active chemical requirements of the cement One of these is that it tends to retard the setting of the cement somewhat, and allows a reasonable time to place the cement where it is needed. Also, being a little more fluid, such a mixture will tend to take the shape of any irregularities in the hole better than a thicker mixture. As a matter of field convenience, if an operator is careful to use about six-tenths of a cubic foot of water to the sack of cement, he will have about this right mixture. Experience shows, however, that you must have some one on the job with authority to say, "so much water and no more". This is not to criticize the men that are doing cementing work either on day labor or under contract. It is human nature that any man or bunch of men will do a particular piece of work in the easiest manner possible that will be acceptable to the outfit paying them to do it. It comes right back on the operators themselves, to specify what they want in the line of mix of cement and to have some one there to see that it is done.

Why Use Much Water?

At first sight it may seem unreasonable (it is just a question of using a little more water) why employes should want to use more water. There are several reasons. It is easier to take a hose and squirt it around than to push a big hoe through a thick mix of cement. In the second place, it is easier to handle it for a pump will not pick up as thick a mix as I have recommended. I have tried it and I know, but, on thinking it over I don't see any good reason why the pump should be expected to pick it up. A pump is not designed to pull something ahead of it, and if you put your pumps on the ground with your boxes above with a close connection between the bottom of the box and the suction of the

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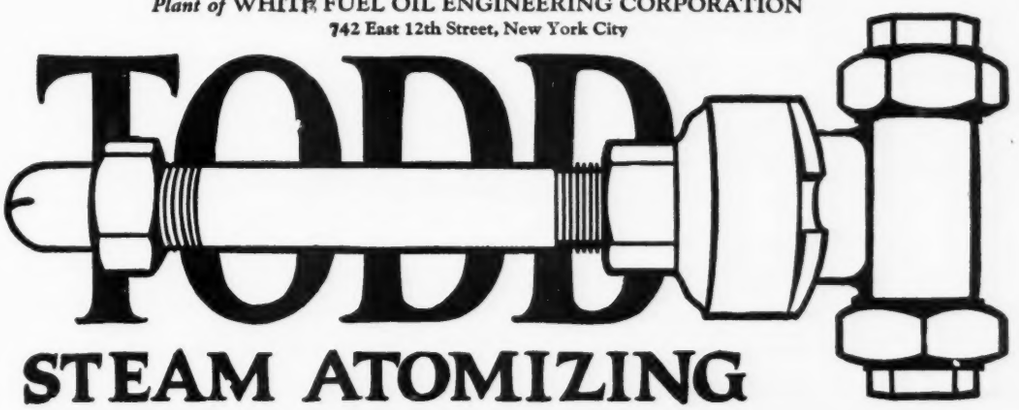

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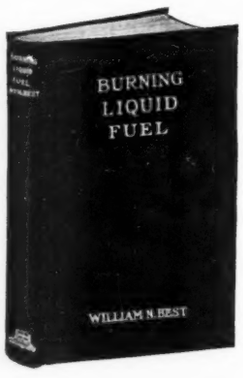

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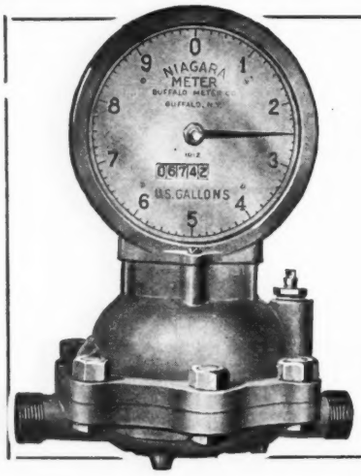

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pump so no lumps get into it, you will find it will take a thick mixture of cement and handle it. The fault has been with us, not in our equipment, but in the arrangement of it; not so much in the cement as the way we have been mixing.

In regard to the mechanical equipment for this type of work we know of the different types. The dump bailer has been successful where small amounts of cement are to be placed. Personally, I don't care to use the dump bailer if I have to make more than one or two runs. It is apt to cause trouble if you delay too long. Then there are various other types of equipment we are all more or less familiar with. It dosen't make so much difference as I see it whether you want to place the cement through tubing or casing, the question is getting it there in a reasonable length of time. We have all seen good pumps connected so they did not get the water fast enough to pump in after the cement and it would take two or three hours to get the cement in place.

In connecting the suction of the pump as I have indicated, use the full size. If the manufacturer built that pump for six-inch suction then use six inch suction, for I have found that the people who make the equipment know more about it than those using it. It is quite common practice to have a good pump bushed down to two inches and pump it down to 10-inch casing. The pump is straining and there may be two or three ells in the line because it is more convenient to take a couple of joints and put a swing in it than to get busy and fix it right. If a pump has a three-inch connection provided for it, that is a good line. Don't cut it down.

There are two general types of mixing cement. One is the batch type, and the other is the continuous. The batch type has been used just on account of field convenience and when properly used does save work, but devices have been used for mixing the cement by machinery and pumping it direct into the well as fast as mixed. That has an advantage in that it saves time. You don't have to get your batch of cement wet and let it stand while you mix more. A great deal of cementing has been done in rotary holes where the cement is in contact with mud fluid. It has been assumed frequently that merely because the cement mixture is a good deal heavier at its higher specific gravity than the mud in the hole that these two are going to take relative positions according to specific gravity. That is partially true, but like a great many part-truths, it is dangerous for it omits some of the important facts.

One of the most important facts omitted is the question of viscosity or, in some cases, plasticity of the mud. A very small increase in the amount of mud (suppose you take ordinary blue mud as we have in California and on the Pacific Coast) running about 1.15 specific gravity, is easily pumped, and the cement will take a good set in that, that is, take a good position in that mud with the mud on top of it. But if you raise that blue mud to about 1.3 specific gravity you are apt to find that your cenemt will channel through the mud, and you will just have it streaked in and around your casing in all sorts of odd shapes, and do you little or no good. By a small addition in the amount of clay, you increase the stickiness of your mud, and in spite of the fact that such a mix as I have recommended will run about 1.9 in specific gravity it will channel through viscous mud.

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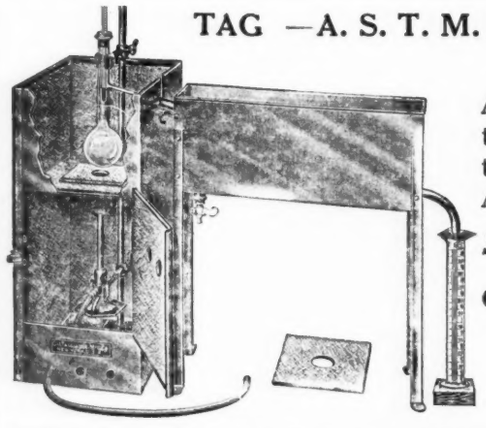

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Preparations Completed For Drilling In Alaska

WASHINGTON, Jan. 1.—In August, 1922, two steamers landed equipment for drilling at Portage Bay, in the Coal Bay oil field, on Alaska Peninsula, says the annual report of the U. S. Geological Survey, now being prepared for publication. The town of Kanatak, at the head of Portage Bay, was changed in a short time from a settlement of from 10 to 15 whites to a boom town with tents, cabins, and frame buildings numbering a hundred or more, and with a population of 150 to 200, which has been augmented by still others arriving on every boat. Several months before the oil rigs were landed all the ground for several miles from the town had been staked. Drilling is to be done on the Pearl Creek dome, 17½ miles northeast of Kanatak, by the Associated Oil Co. and the Standard Oil Co. of California. The Associated Oil Co. is equipped with two portable Star rigs and intends to use local petroleum residue as fuel. The Standard Oil Co is equipped with a standard rig and the equipment needed for drilling to a depth of 4,000 feet. Power is to be furnished by a 75-horsepower gasoline engine.

Immediately after the arrival of the steamers work was started on a wagon road that must cross two 1000-foot divides, and by the middle of October this road was a little more than half completed. All hauling will be done by tractors. It is doubtful whether drilling can be started before the spring of 1923.

This preparation for drilling in the Cold Bay oil fields is by far the most important event in the history of the Alaska petroleum lands since their withdrawal from entry in 1910 and their being thrown open to leasing in 1921. Though this preparation was the only definite action taken in 1922 for drilling in the prospected though undeveloped Alaska oil lands, plans for such development in other parts of the Territory are under way, and applications for oil permits are still being filed. Test drilling in other regions will quickly follow, if it does not precede, the discovery of an oil pool in the Cold Bay field.

New Directors For Refinery

LOS ANGELES, Dec. 29.—Recently there was a change in the personnel of the board of directors of the Angeles Snowelene Refining Co., through transfer of stock interests, which necessitated the creation of an entirely new board, and that body is now composed of: John McKeon, a successful drilling contractor, president; H. L. Bentley, investor, vice-president; J. E. McDavid, investor, secretary-treasurer, with F. E. Snowden, the organizer and a practical refinery man who will also be general manager, and K. M. Doan, formerly connected with the Anglo-Mexican and other leading companies, who will be refinery superintendent, make up the board of directors. The refinery, which is located at the southern end of Los Angeles, is expected to start operation Dec. 15. A holding company has also been organized which will build small refineries throughout the state which will embody the Snowden principles of operations.

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Physical Valuation Of Oil Properties

Article IV—The Write-Up And Summaries. Rate Valuations And Valuations For Plant Ledger

By Alexander B. Morris

This is the last of a series of articles on the correct methods of determining the physical valuation of producing, pipe line and refining properties which received little attention from oil companies until the necessity arose to make returns under the federal income tax law. The first of the series, published Nov. 8 by National Petroleum News, dealt with the purpose of the valuation. The second one, published Nov. 15, explained how to make the inventory. The third, published Nov. 22, dealt with the preparation of the cost data and the writing up of field notes. This one takes up the finished valuation and the summary. The discussion has taken up only the physical property. The method of valuing oil and gas reserves has not been touched.—Editor.

WHILE the cost data are in process of compilation, the write-up of the inventory sheets should be begun. It will generally be possible to accomplish considerable along this line before the field party returns, merely from records available in the office. This is particularly true of well sheets, all of which will be practically indentical in outline, and for which much of the detail must be obtained from the logs or other well records. It also applies to field and gathering lines where there are maps or other notes which are acceptably up to date. Such data as are not furnished by office records can readily be added when the new inventory comes to hand.

The general scheme of the write-up should be consistent with the instructions issued to the field party and should not strive for greater refinement in description of material than can be supported by the notes or the cost data. To do so will create many points at which those pricing out the sheets will be required to guess which of two or more classes of material is meant, and will thus make for inaccuracy in pricing, as well as for confusion in the general effect produced. Descriptions should therefore conform strictly to those used in the cost data.

Standard Form is Best

A standard form should be adopted and closely adhered to throughout. This will always be an outline, but the choice of captions, and their proper co-ordination will generally depend upon the kind of property being valued and upon the purpose of the valuation. The plant unit should be the governing consideration, however, and the outline should provide a logical set of captions so that totals may be readily drawn at the end of the inventory of each such unit; and the captions should be in exact conformance to the totals to be drawn. Thus, totals should not be drawn down for the various parts of a building where the caption preceding the detail indicates the entire building rather than some particular part of it. The carrying of subtotals under such a caption is not only misleading to those later consulting the valuations, but is a positive source of error in making the final recapitulation.

Careful Heading Required

Every sheet of the manuscript copy as well as of the typed copy should be completely headed to prevent possible misplacement. This means that it should bear not only the name of the property or company being valued, but, successively, all the captions relative to the details appearing on it. This will entail a great amount of apparently unproductive labor, especially in large jobs; but, whereas the advantages gained are almost imperative, much of this labor can be eliminated by the use of a Ditto machine or a mimeograph. The total number of sheets that will be required can be roughly estimated as can the number of sheets in each of the main classifications.

Accompanying this article is a set of sample sheets from the valuation of a mythical company's property. These sheets present practically all the points to be considered in preparing the write-up. The sheets are first written up as far as shown, and checked against the field notes or maps by another individual. When all the inventory has been covered, or when a sufficient number of sheets have been checked to warrant beginning the next step, all the quantities of building elements are extended, the first extensions being made to the left of the column headed "quantity", and the totals of each class carried into the "quantity" column. Where only one entry appears in a class the extension can be carried out directly into the quantity column. Generally, building elements only will need such treatment, since all other classes of plant will have the total quantities posted in the quantity column direct for the notes. The extensions referred to above should also be checked independently as decimal mistakes are easily made in computing board feet or cubic yards if a slide rule or calculating machine is used. This step having been checked, the sheets are ready for pricing from the cost data.

Data Nearly Complete

By this time the cost data should be nearly completed: at least ready for use in respect to all the common items. Probably information will still be lacking on a few special machines, but these can be shipped for the present, the pages on which they appear being marked by a paper clip or an inserted slip of paper. With the cost data suitably arranged in alphabetical order, with all building costs transferred to a single sheet, the work of pricing an inventory proceeds rapidly. It is of supreme importance that the work from here on be performed with the greatest accuracy, since at any point after this errors may be detected even by a casual examination. Errors in pricing are very easy to make, especially in such items as Gate Valves, where there may be as many as six or eight classes represented. The pricing should therefore be checked at least once, by someone not familiar with the costs, since the tendency to set down or check costs from memory is very strong and almost impossible to resist.

Up to this point all the work on the valuation detail sheets should be performed by trained men. All succeeding work is better and more quickly done by calculating machine operators. What remains is only the making of the final extensions by multiplying the quantites by their respective unit costs, inserting the products in the "Total Column", and the adding up of totals at the proper points.

If the sheets are properly written up with logical subordination of the captions, there will be no question as to where to draw off these totals. Otherwise considerable confusion may arise, especially if an attempt has been made to carry subtotals which are not to appear in the detailed summary. It is for this reason that the outline of the valuation should be so carefully worked out before hand, and so closely adhered to during the writing up. If the rule is made to carry every total to the detailed summary, there will then be no danger of including any part of the detail in the summary twice. As with all the foregoing parts, of the work, the final extensions should be independently checked.

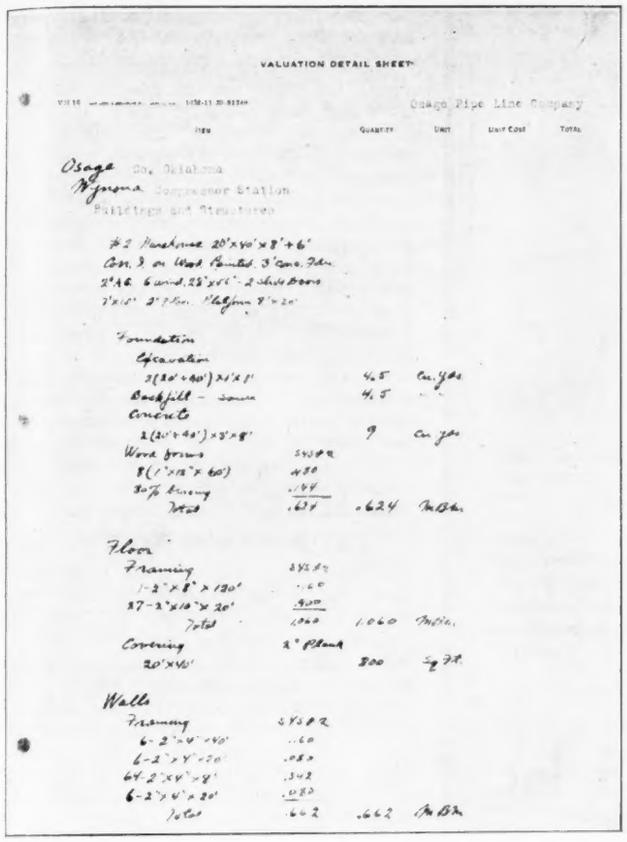
Examine Detail Carefully

In large works, it is generally convenient to subdivide the sheets for working purposes into several loose leaf binders, according to some suitable simple grouping, as, for instance, Vol. 1, Wynona Compressor Station; Vol. II Bird Creek Compressor Station; Vol. III Main Lines; Vol. IV Gathering Lines; Vol. V wells, and so on. This may or may not be the arrangement desired in the finished valuation, but such a method of handling greatly facilitates the work; and the sheets can be rearranged in the desired order before the detailed summary is made.

At this point a careful examination of all the detail should be made by someone of sufficient responsibility, to make sure that no omissions have been made. The head of the inventory party is the logical man to do this since he has actually seen the plant and can better visualize the valuation and compare it with his notes taken on the ground. He should further assure himself that (1) every item is priced, (2) that every extension has been made and the result inserted in the total column. At the same time he should keep a sharp eye to detect such gross errors in extension as may have slipped through the double check. One very common error of this kind is the extension of the unit price direct to the total column without regard to the quantities; and it is surprising how frequently this error gets by especially in parts of the

Item	Reproduction			Plant Ledger	
	Material	Labor		Material	Labor

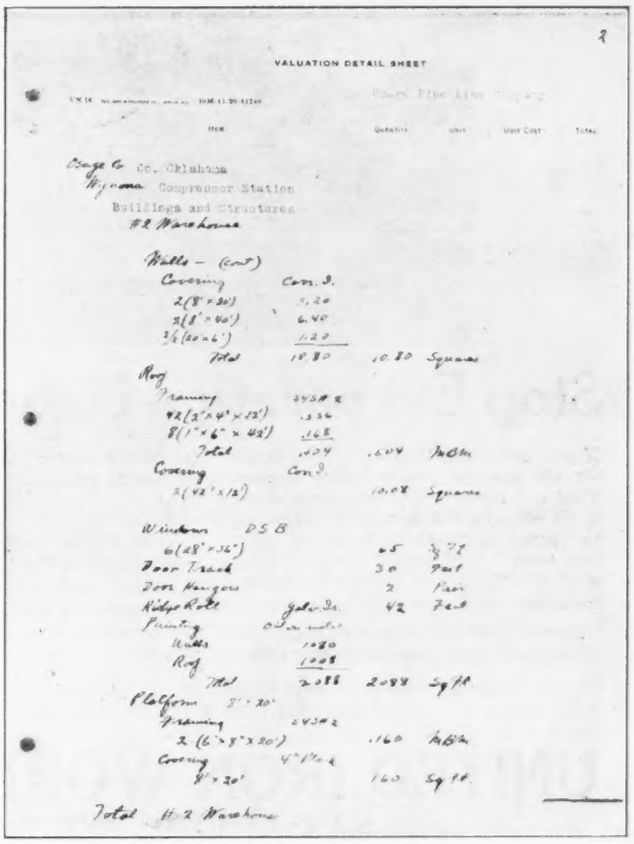
Work Sheet Form



VALUATION DETAIL SHEET

Osage Pipe Line Company

Item	Quantity	Unit	Unit Cost	Total
Osage Co. Oklahoma				
Wynona Compressor Station				
Buildings and Structures				
#2 Warehouse 20'x40'x8'+6'				
Corr. 3. on Wood Roofed. 3'Conc. Ftgs.				
2"A.C. 6 wind. 28"x66" - 2 Skylights				
7'x10' 2" Plank. Platform 8'x20'				
Foundation				
Excavation				
2(20'+40')x1'x1'		4.5	Cu.Yds	
Backfill - same		4.5	"	
Concrete				
2(20'+40')x8'x8'		9	Cu.yds	
Wood forms	S4S# 2			
8(1"x12"x60')	480			
30% Bracing	144			
Total	.624	.624	MBM	
Floor				
Framing	S4S # 2			
1-2"x8"x120'	160			
37-2"x10"x20'	900			
Total	1060	1060	MBM	
Covering 2" Plank				
20'x40'		800	Sq.ft.	
Walls				
Framing	S4S # 2			
6-2"x4"x40'	.160			
6-2"x4"x20'	.080			
64-2"x4"x8'	.342			
6-2"x4"x20'	.080			
Total	.662	.662	MBM	

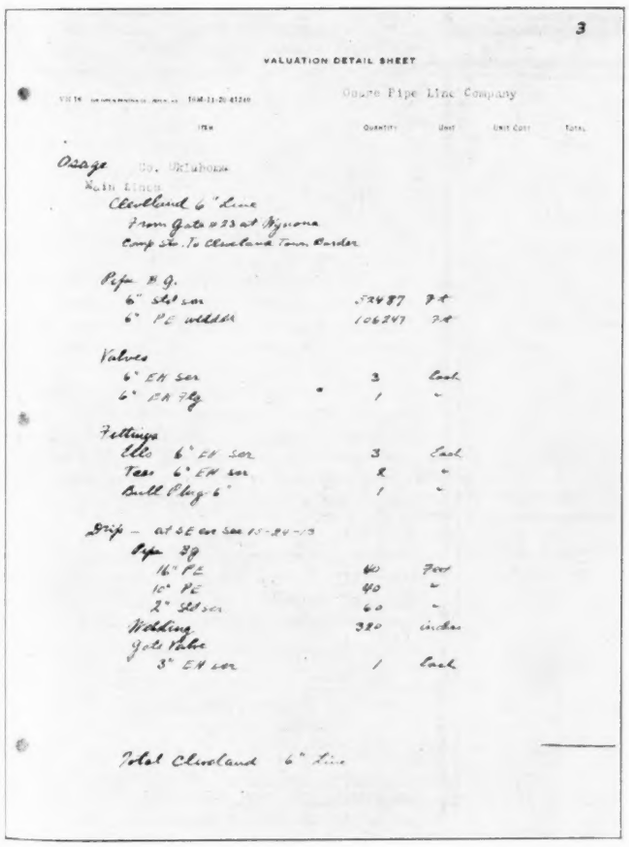


2

VALUATION DETAIL SHEET

Osage Pipe Line Company

Item	Quantity	Unit	Unit Cost	Total
Osage Co. Oklahoma				
Wynona Compressor Station				
Buildings and Structures				
#2 Warehouse				
Walls - (cont)				
Covering	Corr. 3.			
2(8'x20')	3.20			
2(8'x40')	6.40			
3½(20x6')	1.20			
Total	10.80	10.80	Squares	
Roof				
Framing	S4S # 2			
#2(2"x4"x12')	.336			
8(1"x6"x48')	.268			
Total	.604	.604	MBM	
Covering Corr. 3.				
2(42'x12')		10.08	Squares	
Windows D.S.B.				
6(28"x36")		25	Sq.ft.	
Door Track		30	Feet	
Door Hangers		2	Pair	
Ridge Roll Galv. Sh.		42	Feet	
Painting Ctg. on metal				
Walls	1080			
Roof	1008			
Total	2088	2088	Sq.ft.	
Platform 8'x20'				
Framing	S4S # 2			
2 (6"x8"x20')		.160	MBM	
Covering 4"Plank				
8'x20'		160	Sq.ft.	
Total #2 Warehouse				

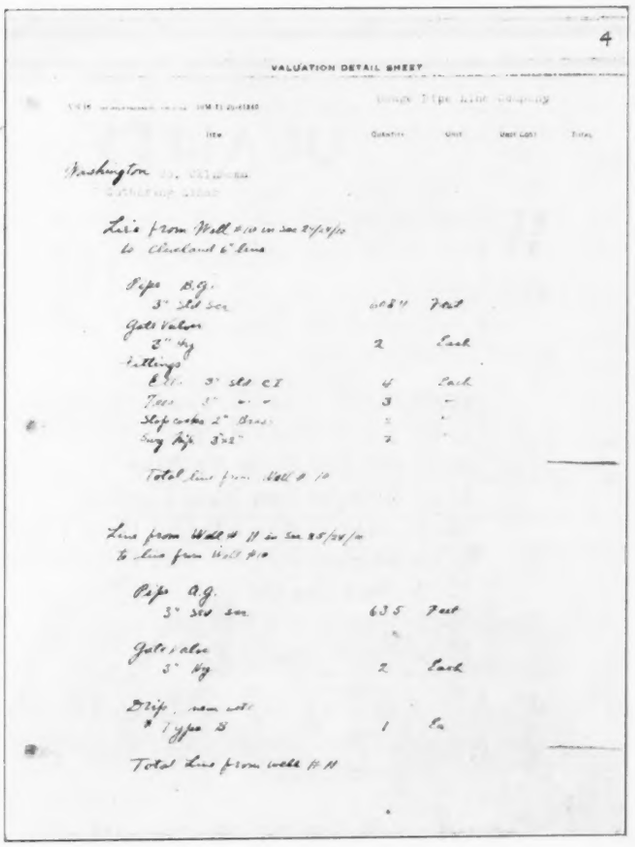


3

VALUATION DETAIL SHEET

Osage Pipe Line Company

Item	Quantity	Unit	Unit Cost	Total
Osage Co. Oklahoma				
Main Lines				
Cleveland 6" Line				
From Gate #23 at Wynona				
Comp Sta. To Cleveland Town Border				
Pipe B.G.				
6" Std Smls	52487	Ft		
6" PE welded	106247	"		
Valves				
6" EH Scr	3	Each		
6" EH Flg	1	"		
Fittings				
Ells 6" EH Scr	3	Each		
Tees 6" EH Scr	2	"		
Bull Plug 6"	1	"		
Drip - at SE cor Sec 15-24-13				
Type 39				
16" PE	40	Feet		
10" PE	40	"		
2" Std Scr	40	"		
Welding	320	Inches		
Gate Valve				
3" EH Scr	1	Each		
Total Cleveland 6" Line				



4

VALUATION DETAIL SHEET

Osage Pipe Line Company

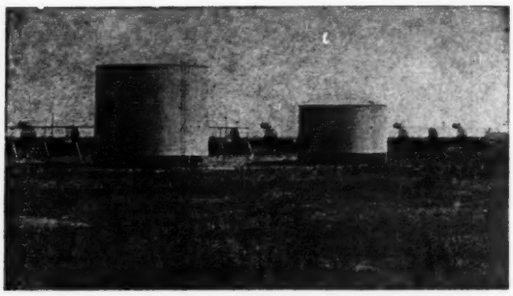
Item	Quantity	Unit	Unit Cost	Total
Washington Co. Oklahoma				
Gathering Lines				
Line from Well #10 in Sec 2/24/12e				
to Cleveland 6" Line				
Pipe B.G.				
3" Std Scr	6084	Feet		
Gate Valves				
3" Flg	2	Each		
Fittings				
Ells 3" Std CI	4	Each		
Tees 3" " "	3	"		
Slip on 6x2" Bush	1	"		
Sug Flg 3x2"	2	"		
Total line from Well # 10				
Line from Well # 11 in Sec 25/24/12e				
to line from Well #10				
Pipe B.G.				
3" Std Scr	635	Feet		
Gate Valve				
3" Flg	2	Each		
Drip - non ret				
" Type B	1	Ea		
Total line from Well # 11				

The four sample sheets above show the method of writing up inventory of various classes. The typed portions are what can be run off beforehand on a mimeograph. The manuscript portions are what is actually transcribed from the notes of well records. Note the sequence of the captions at the head of the consecutive pages 1 and 2. Note also the method of describing the various parts of the transportation system; pages 3 and 4 not consecutive.

Such preliminary detail as appears to the left of the "Quantity" column on pages 1 and 2 can be omitted from the typed copy, in which the items should be shown as follows:

Walls			
Framing	**S4S No. 2**	**.662**	**MMB**
Covering	**Corr. 1.**	**10.80**	**Squares**

Crowding should be avoided throughout.



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64-66 Straight Run 375 End Point Gasoline
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34-36 Light Straw Gas Oil
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inventory where most of the items appear singly, with an occasional item showing two or three units.

When the final arrangement of the sheets has been made they should be numbered in consecutive order, the numbers running straight through in one series regardless of the number of binders required to hold the sheets. The sheets are then ready to be totalled. This should be done on a machine with a tape, and the engineer in charge, or someone of equal responsibility, should check this tape against the detail, noting particularly that the totals are drawn at right places. Besides, this brings the entire job under the critical eye of the chief. It is better practice to refrain from running any totals until all the preliminary work is complete, as it frequently happens that changes in the inventory or in the pricing of certain items may be found necessary, due to accidental omissions or errors, or to a slight change in the scope of the valuation.

Ready to be Typed

The valuation is now ready to be typed. The typed sheets should be carefully compared with the manuscript by competent parties. An excellent check on the typing of the "Total" column, is to rerun all totals using the typed sheets only, making sure that the results thus obtained are the same as those shown in the manuscript. It is impossible to check extensions or totaling of this kind too many times, at it seems to be almost impossible to eliminate all mechanical errors. When the sheets have been compared and any necessary corrections made, the several copies are separated and the original carefully compared with the manuscript to prevent misplacement of any sheets. The pages of all copies are then numbered.

There remains only the making of the summaries. The detailed summary should be very full, and should be, in fact, a duplicate of the valuation captions, showing, properly labelled, every total drawn down in the body of the work. The outline from, with the same subordination of plant items should be used as was used in up. The number of the page in the typed valuation, upon which each plant unit bearing a total begins should be shown at the left. By using several columns for the totals, the detailed summary can be made to show various other classifications of the plant not contemplated in the detail, without departing from the order and outline used in the write-up. The making of this summary is always a one-man job, and should be done by the engineer in charge.

The final summary should not contain more than four to six items. Thus the general summary of one $30,000,000 property contains just these four items:

1. Compressor Stations.
2. Main Lines.
3. Gathering Lines.
4. Wells.

The total shown at the end of the general summary is the reproduction cost new, as of the valuation date, of the property under consideration.

The Rate Valuation

If the valuation has been made for rate purposes certain modifications will have to be made in the above figure. It may be required, that the condition of the property be considered; that sustained depreciation be taken into account. In

this event, the inventory party will have been so instructed, and will have noted, as to each plant unit, its per cent condition. These various percentages can then be applied to the corresponding totals in the detailed summary, and a new general summary prepared, which will show the value of the property as it stands today, based upon the prices prevailing at the valuation date, in a rate case, generally recent. To this new figure certain additions in the shape of overheads are allowed. These may be computed as follows:

Calculation of Overheads
Gas Companies

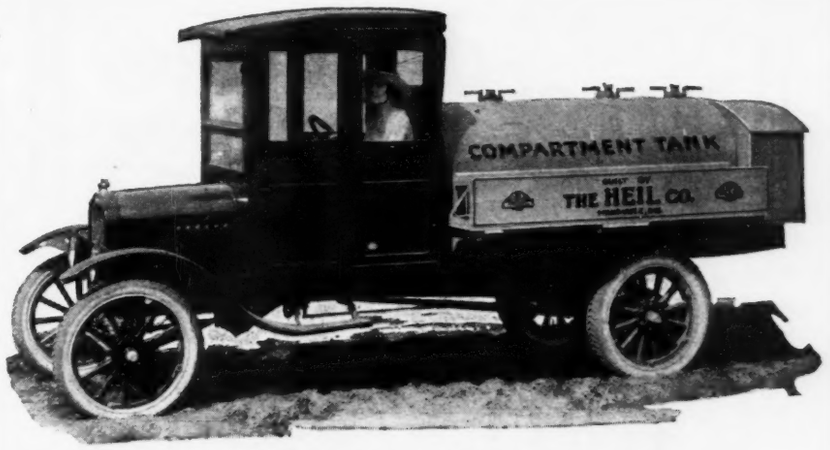
Bare Physical Property (from General Smmary)	$***(1)
Right of way	***
Real Estate	***
Omissions and Contingencies 5 per cent of (1)	***
5% of (1)	***
Engineering & Supervision 5% of (1)	***
Insurance during Construction —% of (1) (generally 2to 3%	***
Administration & Organization & Legal Exp. 3% of (1) ..	***
Taxes during Construotion (½) year actual	***
Preliminary Operation (½) of (1)	***
Interest during Construction 4% of (1)	***
	$***(2)
Going value 20% of (2)	***
Working Capital, 2 mo. operation & Maintenance	***
Materials & Supplies (actual	***
TOTAL	$***

The items listed are self explanatory. The total obtained in the value of the entire enterprise, as a going concern, upon which the "fair return" is allowed by the rate commission.

Plant Ledger Valuation

Most oil and gas companies of any size are the result of consolidations of smaller companies, either through reorganization or the purchase by one of the entire capital stock of another. In general the plant account of the absorbed company is carried right over on the books of the absorbing company, without regard to the values represented. By reason of the lack of similarity in the accounting systems used, the various additions to the plant account are really not comparable at all; and it is not long before this account, on the books of the absorbing company ceases to have any real relation to the physical property that it represents. It is for this reason that many concerns are now adopting the "Plant Ledger," subdividing their plant account to correspond to the physical plant units.

As a means to this end, the reproduction-cost-new valuation is extremely useful. Having determined this figure for the bare physical plant without overheads, the ratio between this and the total of the plant account on the books is obtained, and the totals shown in the detailed summary each multiplied by this ratio. This makes an allocation of the book figure between all the elements of the plant, and gives results that can be set up in the plant ledger as opening entries in each class. An adjustment account will be



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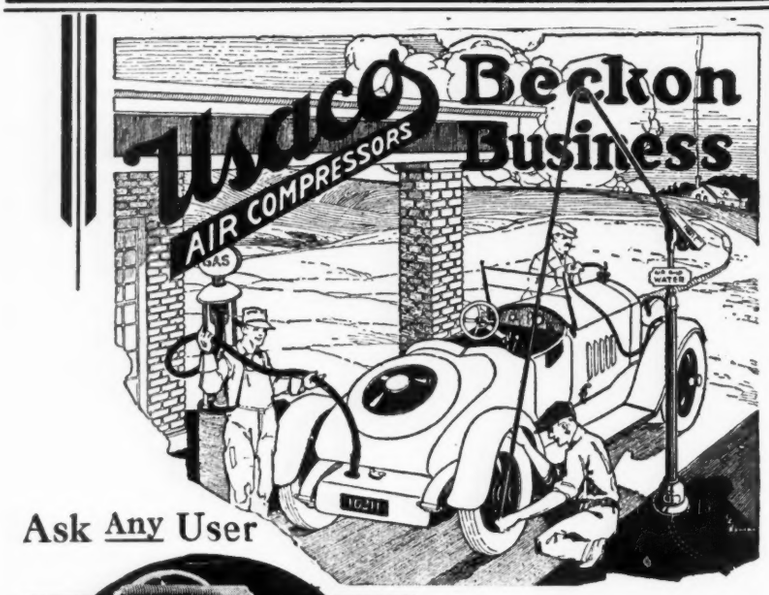
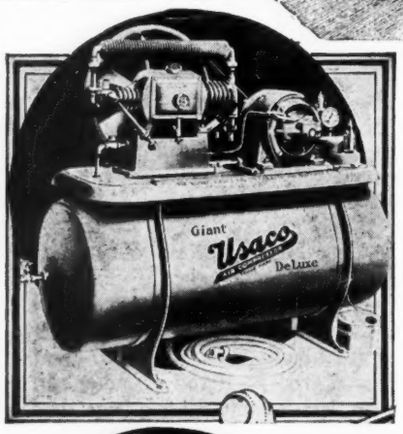
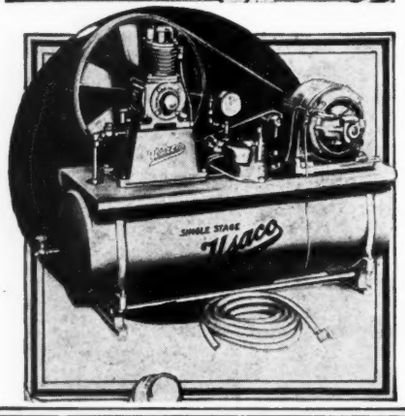


Ask Any User





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necessary through which to clear errors in the valuation, should any be discovered, and in order to insure this being a black figure, the ratio above referred to should be reduced a few points in the third or fourth decimal place.

One of the principal uses of the plant ledger, and the valuation in connection with it, is in the working of reclaims on an equitable basis. The reproduction cost data can easily be altered to conform closely to the "Plant Ledger Valuation" by multiplying each cost by the ratio used to obtain the "Plant Ledger" figure. A work sheet form for this purpose is shown on page 82.

These sheets should be used bound with the "Plant Ledger Valuation" and a copy retained by the "Plant Ledger" clerk for constant reference. When a reclaim is made and the work order and material debit (stock) vouchers come to be credited to on the "Plant Ledger," they are priced out, as to material, from the "Plant Ledger" cost data, the corresponding proper amounts for labor being carried separately, and, after totalling for the job, charged to "maintenance," or some other suitable account. This method insures a uniform basis of "cost" for all parts of the plant; permits partial reclaims from warping the plant account by crediting material at a figure materially different from its cost; and eliminates the necessity of guessing at the sum to be written out of investment to cover the labor of installing the parts just reclaimed. Discrepancies between the "Plant Ledger" totals and the totals as shown by the reclaim vouchers can be cleared through adjustment account.

Union Increases Storage

LOS ANGELES, Dec. 27.—Just as a bit of information bearing on the enormous increase in oil production in Los Angeles and Orange counties in the past year, five years ago the Union Oil Co. received at its harbor refinery through its Los Angeles pipe line less than 400,000 barrels of crude a month. Now, with receipts crowding the four million barrel-mark, work is under way to give the company storage for seven million barrels in this district, and this work is expected to be completed within the next six months. The company has ordered thirty 80,000-barrel tanks, and 20 of these will be receiving oil before June 1. One 750,000-barrel underground concrete reservoir will soon be completed at Stewart, near Brea, in Orange county, and work on three more of equal capacity is under way.

WASHINGTON, Dec. 27.—The Interstate Commerce Commission, in Investigation and Suspension Docket No. 1592, has decided that the railroads hauling petroleum and its products from the Mid-Continent, Texas and Wyoming fields and from Sugar Creek, Mo., to Quebec and Ontario provinces, via the Mississippi river crossings, were justfied in proposing, as they did last June, to increase the rates from the Mississippi river crossings to the Canadian provinces mentioned from 90 per cent or less than fifth class, to fifth class. Fifth class is the basis on which petroleum rates to other parts of Canada and points east of the Mississippi and north of the Ohio are made. The American roads were forced to make the proposal because the Canadian roads demanded division on the basis of fifth class rates.

REFINERY-TANK WAGON MARKETS

Movement To Raise Gasoline Prices Gains Impetus In The Mid-Continent

(Complete Refinery prices, page 91)

Staff Special
TULSA, Dec. 30

THE movement to increase motor fuel prices which became apparent in the Mid-Continent refinery market about 10 days ago gained impetus during the last week. Smaller plants have followed the lead of larger refiners who announced just before the holidays that they were prepared to store their output of gasoline unless they could obtain a price more commensurate with costs of raw material and refining.

When the market opened Tuesday morning it was impossible to pick up more than a few stray cars of new Navy at less than 11 cents a gallon. Since that time the general level of prices has again been raised to 11½ cents. That figure represents an advance of 1¼ cents a gallon in less than two weeks.

Quotations appear to be on a fairly equal level. Some plants have withdrawn quotations altogether and a survey of the market today showed that no Navy could be bought for spot or future delivery at less than 11½ cents.

Other light oil products have moved upwards in the same ratio, with the exception of the more volatile motor fuels which have been in somewhat less demand. Naptha has been increased to from 10¼ to 10½ cents a gallon which is approximately the level of quotations on Navy two weeks ago.

Confidence Predominates

Whatever the private views of the refiners may be as to their ability to sell their products at the new prices it is apparent that they are displaying more confidence today than they have at any time since light oils began their long slide from summer prices to the low point of 10¼ cents a gallon. It appears to be the general opinion of the refiners that they have the best chance to hold prices up at this time that they have ever had since crude was cut so radically in the summer.

The somewhat better aspect of the crude situation as a whole as revealed by current statistics compiled by various agencies has had some effect on the attitude of the refiners. There is a growing expectancy of an early advance in at least the lighter gravity crudes produced in the Mid-Continent.

Recent advances in the market for Wyoming and Mexia and Currie crudes are looked upon by many as a forerunner of a Mid-Continent advance. Bear elements in the market assert, however, that the Texas increases, particularly, were in the nature of a readjustment to bring those crudes into line with the general level of the market in the southwest for crudes of similar gravity.

The increase in eastern crudes announced this morning has done much to increase the optimism of refiners here. It is generally looked on as an indication of better conditions during the early months of 1923.

Production of the Burbank pool in Osage county has been almost stationary for several weeks and a decline of some proportions is predicted at once since virtually all promising locations have been drilled up until the next auction sale in January makes more territory available. But in any case the production is thought to be due for a decline for about 90 days. Aside from the Tonkawa pool there is no other light oil field in Oklahoma which appears now as a menace to the market.

Those who look for an advance in high gravity crude and none for the heavier oil assert that the grading policy adopted by the Prairie Oil & Gas Co. has not been as successful in its results as was expected by the purchasing company. They claim that the producers have stood loyally with the Independent refiners in most cases and are selling their production to former customers without a premium or with only a small payment above the posted market.

It is manifestly impossible to obtain a statement from the major purchasers as to whether the grading has brought them a larger percentage of light oils to average up their pipe line deliveries. The more or less general testimony of the Independent refiners that they are getting as much crude as before and of the same gravity would tend to show that a further rise in prices of high gravity material may be expected, according to the views of some.

Even those who believe that current prices on gasoline cannot hold are of the opinion that a change in crude prices might change the trend of the market as place it in a definitely firm position at the higher levels.

Indiana Competition

Many rumors have been current in the market since higher prices have been the rule. It has been said that the Midwest Refining Co. has withdrawn from the market and begun a storage program and the rumor has been denied.

A survey of the consuming market in Standard of Indiana territory conducted during the past few days by the Chicago representative of **National Petroleum News** revealed that an important marketer who has been selling large quantities of Wyoming gasoline to the trade has had none to offer this week. No information could be obtained as to whether that condition is to prevail over any extended period.

But the same survey revealed the report that the Standard Oil Co. of Indiana is now offering gasoline f.o.b. Whiting, Ind., at around 13 cents a gallon. That price would figure somewhat lower than present Mid-Continent quotations when freight rates are taken into consideration.

Bear elements in the market contend that the Midwest has lowered its stocks to a comfortable figure in its selling campaign and has now withdrawn in favor of the parent company to give it an opportunity to take its place as an active competitor of Group 3 in the tank car market.

New prices for naptha which are a full cent above their former level have had some effect on the quotations offered on blended gasolines. If current naptha prices are maintained it will be impossible for blenders to continue selling at figures they have been quoting earlier in the month. One company which makes considerable blended gasoline announced today that it has raised its prices 1 cent a gallon and will cease blending if it cannot sell at that figure.

Natural gasoline has shown little change either for better or worse this week. Low gravity absorption grades are quoted at from 12 cents a gallon upwards and a tendency is noted to stress the upwards. Grade A is reported to be particularly hard to buy.

Absorption grades are moving at from 11 to 11¼ cents a gallon today and some manufacturers are trying to obtain from ¼ to ½ cent more.

Kerosene

While there is more apathy in the kerosene market and less hope that it will be able to follow any upward trend at this time there is a more or less general movement to increase prices on that commodity as well. Some refiners have gone back to the old prices of 4¾ and 5 cents a gallon at which sales were easily made earlier in the season.

Fuel Oil

Prices on fuel oil have shown little or no change throughout the entire month. But little can be picked up at less than 90 cents a barrel in sellers' equipment.

The tank car situation has become so much easier recently that it is now difficult to obtain offers of a reduced price on fuel oil in buyers' cars. Such oil as is available for buyers' cars is quoted at between 85 and 90 cents a barrel.

Rumors have been current recently that one large company has been offering fuel oil for shipment over January at from 5 to 10 cents below the Group 3 market. But in spite of that fact there is no tendency on the part of refiners here to offer fuel for shipment over any short or extended period at less than the spot market. Fuel stocks in Oklahoma are relatively small and are giving no concern ot the average refiner.

Sale of Smackover crude in large quantities to southern railroads has had little or no effect on the market here. Prices reported on the deals have been about 15 cents a barrel under Oklahoma fuel which is without the objectionable features of the Smackover crude on account of its lighter gravity and smaller sulphur content.

Gas oil appears to have become considerably stronger during the past few days. Buyers are finding it difficult to buy much under 2¾ cents a gallon. Prices have been down as low as 2⅝ cents earlier in the month.

TIDAL GASOLINE

"A Winsum Product for Winter and Summer"

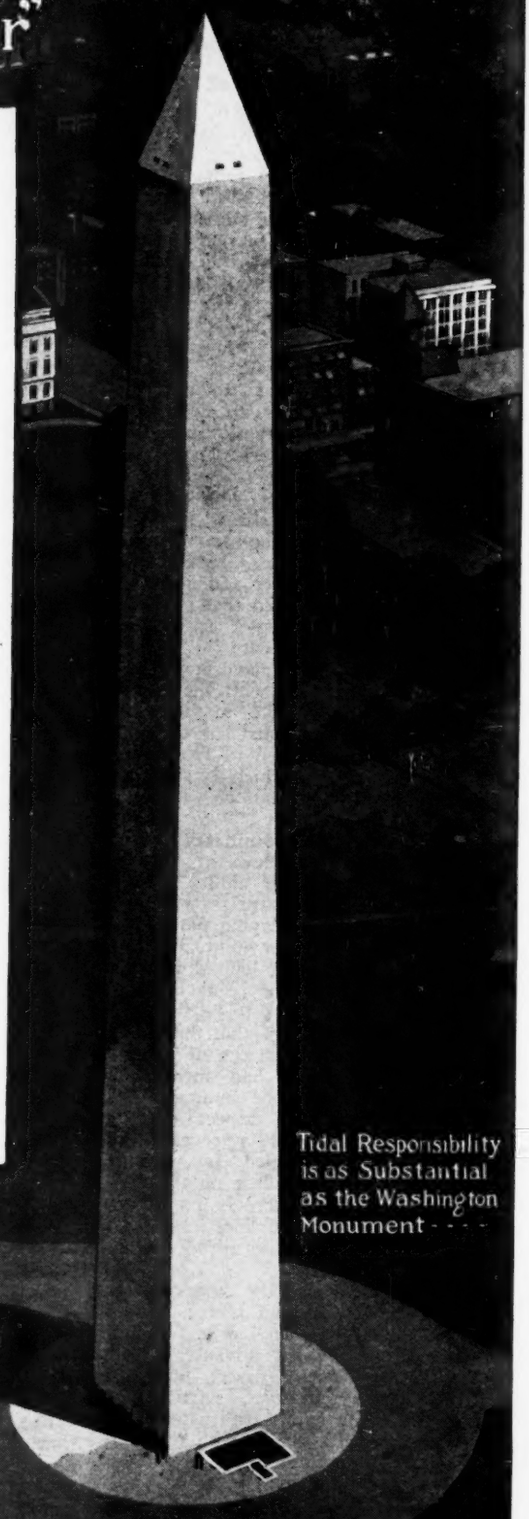
Bulletin No. 100

Such words as "straight-run", "blend", and "cracked", as applied to gasoline, are losing any special significance they may have had. They now have little or no value as a guide in the selection of a gasoline. In the intensive work of refinery engineers to produce good motor fuels, general classifications indicated by the words mentioned above have to a large extent disappeared. For instance, virtually all so-called straight-run and cracked gasoline now contains a certain percentage of "natural" gasoline, and has been decidedly improved by this addition. Natural gasoline, which is obtained directly from natural gas, assures the volatility, the rapid and complete combustion, the quick starting and quick accelerating qualities so essential to the smooth and economical performance of the motor, particularly in cold weather.

We anticipated several years ago the important part natural gasoline was to play in motor fuel production and began to install and buy gasoline plants to an extent that has provided our refineries with abundant natural gasoline supplies and has put us in a very strong position in the matter of producing the best possible motor fuel. We make the most of this position in manufacturing Tidal Gasoline, which gives the motorist preeminent satisfaction.

W. Wheeler, V.P.

Wire or Write



Tidal Responsibility is as Substantial as the Washington Monument - - - -

TIDAL GASOLINE COMPANY
Tidal Building ~ Tulsa, Oklahoma
Subsidiary to the
Tide Water Oil Company, New York
makers of
Veedol Quality Lubricants and Tydol Economy Gasoline

Refinery Markets On All Products

Pennsylvania, Oklahoma, North and South Texas, Louisiana, Arkansas

FOLLOWING are the average market prices on the more important petroleum products in cents per gallon f. o. b. in Oklahoma, Texas refinery and Pennsylvania. These are actual prices at which the bulk of each product is moving from the refineries at the present time. Anyone having knowledge of different prices which have obtained on any considerable quantity of any of the products mentioned will greatly favor us by advising us at once.

GASOLINE AND NAPTHA

PENNSYLVANIA	Prices Jan. 2	Prices Dec. 26	Prices Dec. 4
50-52 Naptha	12¾-13	12¾-13	12½-13
54 Naptha	13¾-14	13¼-13¾	13 -13½
58 Naptha	14½-14¾	14¼-14¾	14½-14¾
60 Straight-run gasoline	15¼-15¾	15 -15¾	15½-15¾
62 Straight-run gasoline	16½-17	16¾-17	16¾-17
64 Straight-run gasoline	18½-19	18¾-19	18¼-18¾
68 Straight-run gasoline	23 -23½	23 -23¼	23 -24
68-70 Blend, 450 E. P.	14½-14¾	14½-15	14½-15
60-62 Blend, 450 E. P.	14½-14¾	14½-15	14½-15
62-64 Blend, 450 E. P.	14½-14¾	14½-15	14½-15
66-68 Blend 440 E. P.	15 -15¼	15 -15½	15 -15½
68-70 Blend, 440 E. P.	15 -15¼	15 -15½	15 -15½
68-70 Blend, 420 E. P.	-15½	-16	15½-16
OKLAHOMA			
48-50 450 E. P naptha	10 -10½	9 - 9¼	9¼- 9½
50-52 450 E. P. naptha	10¼-10¾	9¼- 9½	9½- 9¾
56-58 450 E. P. gasoline	10¾-11	10 -10¼	10¼-10½
55-57 (New Navy), 437 E. P. 131 i.b.p	11 -11¼	10¼-10½	10½-10¾
58-60 (New Navy), 437 E. P. 131 i.b.p	11¼-11¾	10¼-10¾	10¾-11
60-62 400 E. P. gasoline	13¼-13½	12¾-13¼	13¼-13½
64-66 375 E. P gasoline	15½-16	14¾-15	15 -15½
68-70 350 E. P. gasoline	17 -17½	17¼-17½	17½-18
NORTH TEXAS			
48-50 460 E. P. naptha	8¼- 8¾	7¾- 8¼	7¾- 8¼
50-52 450 E. P. naptha	8½- 9	8¼- 8¾	8 - 8½
56-58 450 E. P. gasoline	10½-11	9¾-10¼	10¼-10¾
58-60 400 E. P. gasoline	10¾-11¼	10 -10½	10½-11
60-62 400 E. P. gasoline	12¾-13¼	12½-13	13 -13½
64-66 390 E. P. gasoline	14 -14½	14¼-14¾	15 -15½
58-60 New Navy Spec. gas	11 -11½	10¼-10¾	10¾-11¼
LOUISIANA-ARKANSAS			
51-53 460 E. P. naptha	9½-10	9½-10	8½- 9
56-58 450 E. P. Gasoline	10 -10¼	10 -10¼	10 -10¼
58-60 437 E. P. New Navy Gasoline	10¾-11¼	10¾-11¼	11 -11¼
64-66 400 E. P. Gasoline	15 -15½	15 -15½	16 -16¼

NATURAL GASOLINE

OKLAHOMA			
Grade A, 72-78, 375 E. P., 90% Rec	12 -12½	12¼-12¾	13 -13¼
Grade B, 76-82, 375 E. P., 85% Rec	11½-12	12 -12½	12¾-13
Grade C, 80-88, 350 E. P., 78% Rec	10¾-11¼	11½-12	12½-12¾
Grade D, 88-92, 350 E. P.	10¾-11¼	11½-12	12¼-12½
(Motor Natural Gasoline—Blends)			
Grade 1, 58-62, 437 E. P., 91% Rec	10½-10¾	10 -10¼	10½-10¾
Grade 2, 58-62, 450 E. P., 90% Rec	10¼-10½	9¾-10	10¼-10½
Grade 3, 64-66, 440 E. P., 88% Rec	10¾-11	10 -10½	10¾-11
Grade 4, 66-70, 435 E. P., 85% Rec	10¾-11	10¼-10¾	11 -11¼
NORTH TEXAS			
Grade A, 72-78 Absorption	11¼-11¾	12¼-12½	12½-13
Grade C, 80-88 Compression	10¾-11¼	11½-12	12 -12½
(Motor Natural Gasoline—Blends)			
Grade 1, 58-62, 437 E. P.	10¾-11¼	9¾-10¼	10¼-10¾
Grade 2, 58-62, 450 E. P.	10½-11	9½-10	10 -10½

BURNING OILS

PENNSYLVANIA			
45 Water White	7½- 7¾	7¾- 8	8¼- 8½
46 Water White	8¼- 8½	8½- 9¼	9 - 9¾
47 Water White	9½- 9¾	9¾-10¼	9¾-10¾
300 Burning Oil	- 7½	7 - 7½	7 - 7½
OKLAHOMA			
41-43 Water White	4½- 4¾	4½- 4¾	4¾- 5
42-43 Water White	4¾- 5	4¾- 5	5 - 5¼
45-47 Distillate 520 E. P.	6 - 6½	5¾- 6	6¼- 6¾
46-48 Distillate 500 E. P.	6¾- 7¼	6½- 7	6¾- 7¼
NORTH TEXAS			
40-42 Prime White Distillate	4 - 4½	4 - 4½	4¼- 4¾
41-43 Prime White Kerosene	4¼- 4¾	4½- 4¾	4½- 5
41-43 Water White Kerosene	4½- 5	4¾- 5¼	4¾- 5¼
LOUISIANA-ARKANSAS			
41-43 Water White Kerosene	5¼-5½	5¼- 5½	5¾- 6

NEUTRAL OILS

PENNSYLVANIA	Prices Jan. 2	Prices Dec. 26	Prices Dec. 4
(Viscous Test 70)			
200 Vis. No. 3 Assoc. Filt	-23½	23½-24	23½-24
180 Vis. No. 3 Assoc. Filt	-21	21 -22	-21
150 Vis. No. 3 Assoc. Filt	17½-18	17½-18	18 -18½
(Non-Viscous)			
34 350-360 Flash	7 - 7¼	7 - 7¾	7¼- 7½
36 Miners Neutrals 300-305 Flash	6¾- 7	6¾- 7½	6¾- 7
OKLAHOMA			
(Viscous test 100)			
70 Vis. at 100°F. No. 2 Color	5 - 5¼	5 - 5¼	5 - 5¼
70 Vis. at 100°F. No. 2½ 3 Color	4¾- 5	4¾- 5	4¾- 5
100 Vis. at 100°F. No. 2 Color	6 - 6¼	6 - 6¼	5¾- 6
100 Vis. at 100°F. No. 2½-3 Color	5½- 6	5½- 6	5¼- 5½
200 Vis. at 100°F No. 3 Color	12 -12½	12 -12½	11¾-12
200 Vis. at 100°F. No. 5 Color	10½-11	10½-11	10¼-10½
240 Vis. at 100°F. No. 3 Color	14 -14½	14 -14½	13¾-14
240 Vis. at 100°F. No. 5 Color	12½-13	12½-13	12¼-12½
280 Vis. at 100°F. No. 4 Color	15½-16	15½-16	15¼-15½
280 Vis. at 100°F. No. 6 Color	13½-14	13½-14	13¼-13½
300 Vis. at 100°F. No. 6 Color	15¾-16¼	15¾-16¼	15¾-16
SOUTH TEXAS			
(Viscous test 100; cold test 0)			
100 Vis. No. 2 Color Unfilt Pale	7½- 8	7¼- 8	7½- 8
150 Vis. No. 2½ Color Unfilt. Pale	10 -10½	10 -10½	10 -10½
200 Vis. No. 3 Color Unfilt. Pale	12½-13½	12½-13½	12½-13½
300 Vis. No. 3 Color Unfilt. Pale	15 -16	15 -16	15 -16
500 Vis No. 3½ Color Unfilt Pale	18 -19	18 -19	18 -19
750 Vis. No. 4 Color Unfilt. Pale	26 -27	26 -27	26 -27
150 Vis No 1½ Color Filt. Pale	-20	-20	-20
200 Vis. No. 2 Filt. Pale	-24	-24	-24
300 Vis. No. 2 Color Filt. Pale	-28	-28	-28
500 Vis. No 2½ Color Filt Pale	-34	-34	-34
750 Vis. No. 2½ Color Filt. Pale	39 -41	39 -41	39 -41
200 Vis. No. 5½ Color Red Oil	11 -12	11 -12	11 -12
300 Vis. No. 5½ Color Red Oil	13½-14½	13½-14½	13½-14½
500 Vis. No. 6 Color Red Oil	16 -17	16 -17	16 -17
750 Vis. No. 6 Color Red Oil	24 -25	24 -25	24 -25

CYLINDER OILS

PENNSYLVANIA			
600 Steam Refined	9½-10	9¼-10	9¼- 9¾
635 Steam Refined	12 -12½	12 -12½	12 -12½
650 Steam Refined	13½-14	13¼-13¾	13¼-14
600 Flash	16¾-17¾	16½-17½	16½-17
600 Warren E.	17 -18	17 -18	17 -17½
600 Oil City E	14¼-15	14 -14¾	14¼-14¾
600 Medium Filtered (D)	22 -23	22 -23	22 -22½
Cold Test Stocks (bright filtered)	33½-35	33½-35	34 -35
Cold Test Stocks (dark filtered)	30 -32	30 -32	-31
Black Oil	6½- 8	6½- 8	6 - 7
OKLAHOMA			
Bright Filtered Stock	26 -28	26 -28	24 -26
Medium Filtered Stock	16 -16½	16 -16½	15 -17
600 Steam Refined Olive Green	5½- 6	5½- 6	5¾- 6
600 Steam Refined Dark Green	4¾- 5	4¾- 5	4½- 4¾
Black Oil	4½- 4¾	4½- 4¾	4 - 4½

WAX

PENNSYLVANIA			
(Per Pound New York)			
122-124 White Crude Scale	2½- 2¾	- 2¾	- 2¾
124-126 White Crude Scale	2¾- 2⅞	2¾- 3	2¾- 3
OKLAHOMA			
(Per Pound Group 3)			
124-126 White Crude Scale	2½- 2¼	2½- 2¼	2¼- 2½

FUEL OIL

PENNSYLVANIA			
36-40 Fuel Oil	5¾- 6	5½- 6	5¼- 5½
OKLAHOMA			
36-38 Straw Distillate	3 - 3½	3¼- 3½	.....
32-36 Gas Oil (Gal.)	2½- 3	2½- 2¾	2½- 2¾
24-26 Fuel Oil (bbl.)	90 -95	90 -95	90 - .95
Fuel Oil, buyers, cars (bbl)	85 -90	85 -90	85 - .90
NORTH TEXAS			
38-40 Straw Distillate	2¾- 3¼	2¾- 3¼	2¾- 3¼
36-38 Gas Oil	2½- 3	2½- 3	2½- 3
32-36 Gas Oil (gal.)	2½- 2¾	2½- 2¾	2½- 2¾
24-26 Fuel, per bbl	.85-.95	.85- .95	.85- .95
26-30 Fuel, per bbl	.90-1.00	.90-1.00	.90-1.00
South Texas Fuel	1.30-1.40	1.30-1.40	1.30-1.40
South Texas Gas Oil	3¾- 4	3¾- 4	3¾- 4
LOUISIANA-ARKANSAS			
34-36 Gas Oil (Gal.)	3- 3¼	3 - 3¼	3 - 3¼
24-26 Fuel Oil (Bbl.)	.90- .95	.90- .95	.95-1.00

Advanced Tank Car Prices Improve Volume Of Business For Refiners

Staff Special

CHICAGO, Dec. 30. VOLUME of gasoline moved during the closing week of 1922 was exceptionally large for the season and showed an improvement over the preceding week, using the sales sheets of representative Chicago refiners and marketers as a barometer. Jobbers in Standard of Indiana territory have not actually begun to lay in their spring storage, but they are buying slightly in excess of immediate demands. This might have been due to a combination of influences, but the failure of the predicted tank wagon decline to come and the withdrawal of tank car quotations by leading refiners, apparently brought buyers into the market.

Several refiners, even before the upturn in the refinery market price, had ventured the prediction that the tank wagon price in this territory would be higher before it was lower. They had advised their customers of that belief more than a wek ago, which probably was looked upon as sales chatter and heavily discounted by some until the recent advance in the prices of Wyoming crude oil and the coincident withdrawal of Casper gasoline from the market in the central west. With this bearish element removed the Mid-Continent skimmer with inadequate storage found little difficulty in getting at least cost for his output, while the bigger Group 3 points stored against spring requirements.

All Products Improve

Several large buyers came into the market for fuel oil during the week, reducing the available supply considerably, and there was enough shopping about on the part of smaller purchasers to raise the market 5 cents over the preceding week's quotations. One or two marketers reported extensive dealing in gas oil also, which was buoyed naturally by the fuel price. Kerosene was the only weak product. If there was any change in the price of that commodity, it was downward. There was hardly any activity in the market either, due possibly to the mildness of the weather this week.

No fuel oil quotations under 95 cents could be heard in the Chicago market and some marketers held out strong for $1 a barrel for what they had. Gas oil quotations were 2¾ cents a gallon or above; none was available for less. The bottom figure named for kerosene was 4¾ and few transactions were recorded at 5 cents. Some refiners were asking 11¾ cents for gasoline, but the prevailing quotation was 11½. Such cars as showed in the Chicago market as low as 11¼ were quickly garnered by the jobbers who believed that price to be the best for some time.

Bullish Spirit Strong

The bulls in the Chicago market far outnumbered persons who feared a slack market after the first of the year. Most of them believe the example set by the refiners in storing their output will be followed closely by the jobbing trade, and that most jobbers of this territory have empty storage and are waiting only to complete their annual inventory.

However, the normal tendency of every man in a speculative business to buy on a rising market has been felt already, while it is a known fact that only a few of the host of middle western jobbers availed themselves of the 10¼ and 10½-cent prices of two weeks ago to stock their businesses. Besides, the closing down of two Mid-Continent skimming plants last week spoke louder than any kind of language in conveying the message that gasoline had been selling for less than it cost to make it.

Will Regain Losses

The sharp reaction of the refinery price was explained by one marketer this week who said, "The declining refinery price met the rising crude price and bounced." It is likely the effect was about like that in the mind of the Independent refiner after arriving at the conclusion mathematically that the grading of Mid-Continent crude was actually an advance at a time when his refinery operations were doing well to break even. A corresponding advance in eastern and Rocky Mountains crudes since that time emphasized the upward trend of the market.

There are current predictions in marketing circles here that figures when available will show jobber gallonage of December, 1922, to be a record breaker. Those who were stimulated by the psychology of a rising market to lay in storage at 11 cents were so few as to be negligible. The jobber bought hand-to-mouth just as certainly in December as in the foregoing month which was an unusually active November. December gallonage probably did not come up to that of November but nevertheless may compare favorably in view of the severe weather which swept the middle west a little before Christmas.

Car Service Spotted

There is an abundance of tank cars available at present. The railroads of the country have handled their peak load and momentarily are undergoing a little relaxation. Some of them are well enough equipped with motive power to take care of any ordinary situation while others have not showed much improvement. A few Chicago refinrs have advised their customers to place their shipping instructions 50 per cent earlier than they do ordinarily at this season of the year—but that depends largely on the geographical location of the customer and the roads upon which he must depend for service.

A few tank cars have been reported to have made the trip from Group 3 to Chicago switching territory in four days recently. However, some roads have not gotten much better since the shopmen's strike was at its worst and it is true that cars still get lost and spend three weeks to a month getting from some Oklahoma point to Chicago.

Mo. Pac. Buys More Fuel

(Complete Refinery prices, page 91)

SHREVEPORT, Dec. 30.—The north Louisiana and Arkansas refinery market has been quiet during the holidays. Prices are virtually unchanged as compared with a week ago. Keen competition from major companies operating in the southeastern states together with the low tank wagon market prevailing has served to decrease inquiries from domestic purchasers. Export buyers have shown little or no interest in either motor fuels or kerosene.

Continued interest is being shown by the railroads in Smackover crude for oil in locomotives on southern divisions. It was reported here today that the Missouri Pacific railroad has closed a contract with the McPhail Oil Co. for 1,000,000 barrels of Smackover crude to supplement the 3,000,000-barrel order placed a week ago with the American Oil Co. of Houston. Delivery is to start at once.

Curb Pumps To Stay

ROCHESTER, Pa., Dec. 29.—The Association of Oil Pump and Tank Manufacturers has obtained the temporary withdrawal of a proposed ordinance in Knoxville, Tenn., to prohibit bar curb pumps after one year. The Knoxville City Commission expects to map out a zone system of the business district in the next six months and then pass an ordinance that will permit curb pumps in the non-congested districts.

Eastern Refiners More Optimistic; Crude Oil Advance Brings In Buyers

(Complete Refinery prices, page 91)

Staff Special

CLEVELAND, Jan. 2.—Refiners in the Pennsylvania district opened the New Year with a more optimistic tone pervading their business. The increase in the price of Pennsylvania crude oil caused a firming of several products and also brought more buyers into the field. Many jobbers who had failed to replenish their stocks of motor fuels near the close of last year, started buying as soon as they returned to business from the New Year's holiday. They sought mostly straight run gasolines and as a result of this policy of buying, the blended fuels were weaker than a week ago.

Purchasers were also in the market for viscous neutral oils and while prices changed but little over the week, the tone was better and inquiries indicated that considerable activity may be expected for these oils in the next few weeks. The demand for the non-viscous neutrals was slow and the prices were a little weaker. Cylinder stocks were quiet.

The cold weather stimulated the demand for Pennsylvania fuel and the price was ¼ cent a gallon higher than a week ago. Stocks of this oil are not great as some of the refiners are holding their output for cracking in order to meet their gasoline requirements for the 1923 season.

Kerosene, however, failed to react either to the greater demand for light burning oils or the higher price of Pennsylvania crude oil. Prices were down ¼ to ½ cent from those of a week ago.

The waxes also were lower with little demand for spot goods.

Gasoline Prices Higher In North Texas Market

DALLAS, Dec. 30. — Gasoline price increases of a full cent a gallon featured the closing days of the week in the north Texas refinery market. The movement to bring prices more into line with costs which began in Group 3 a week ago has spread through this territory quickly within the past three days. New Navy gasoline is being quoted at from 11 to 11½ cents a gallon and some plants are asking as much as 12 cents in comparison with free movements at from 10¼ to 10¾ cents a week ago.

The general cut of 2 cents a gallon in both gasoline and kerosene announced Thursday appears to have had but little effect on the refinery market for gasoline. Common point territory in Texas now has a tank wagon of 16 cents a gallon while differential territory has 17 cents on gasoline. Competitive points where price cutting has lowered markets radically were not touched by the cut. The reduction brings the general Texas market more nearly into line with other territory served by the Magnolia Petroleum Co.

Blended gasolines have been marked up to a level which is nearly equal to the quotations offered on straight run products. Natural gasoline is slightly cheaper.

Kerosene has not followed gasoline in the upward movement. The product is even weaker since both domestic and export demand have fallen off. It is stated that the export purchasers have revised their price offers down to around 4 cents a gallon and have placed no new orders.

Railroads are displaying more interest in fuel oil. Inquiries have been circulated by the Katy recently for between 40,000 and 50,000 barrels of fuel for January delivery. The Fort Worth & Denver City railroad has bought 40,000 barrels this week for early delivery. Prices are remaining more or less steady. Some material is available at 85 cents but the bulk of the movement is at 90 and 95 cents a barrel.

Associated Widens Scope

LOS ANGELES, Dec. 29.—Within three months the Associated Oil Co. has completed the erection of distributing station at Burbank, Cal., about 15 miles east of Los Angeles, at a cost approximating $150,000, and has started serving the San Fernando Valley, Glendale and Hollywood with gasoline and lubricating oil.

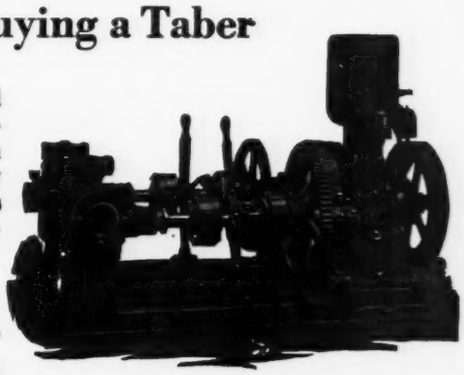
The equipment, built on a three-acre tract, on the main line of the Southern Pacific, consists of an office building, warehouse large enough to store three carloads of lubricants, garage for 10 trucks and trailers, one 2500-barrel and 1500-barrel tanks for gasoline.

At present the company is operating six 1100-gallon trucks and 18 men are on the payroll. T. M. Dunn, who has been district agent for the company at Santa Rosa, has been transferred to the Burbank plant.

The Associated came into the southern California field from San Francisco the early part of this year. In that time it has built and equipped a marine supply station at the harbor covering 20 acres and the Burbank plant. Plans are now under consideration for the construction of distributing plants of the same nature as the Burbank in Los Angeles and San Pedro.

You Save by Buying a Taber

Fig. 308 is a powerful pumping unit of two 2-inch 'S' pumps with bronze buckets. Capacity 75 and 100 GPM. Clutches permit independent operation of pumps.



Taber Pump Co.

286 Elm St. Buffalo, N. Y.

GULF Refining Company

General Sales Offices
PITTSBURGH, PA.
District Sales Offices
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REFINERS OF OKLAHOMA TEXAS AND LOUISIANA

PETROLEUM

REFINED OIL
GASOLINE
NAPHTHA
GAS OILS
PARAFFINE WAX
ASPHALT

Fuel Oil--Lubricating Oils

CYLINDER ENGINE
CORDAGE

RED AND PALE PARAFFINE OILS

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This sectional view illustrates the principle of the exclusive drain which is a part of equipment of all Weldco tanks. Note the shape of each compartment which drains down like a funnel. This funnel drain is individual in each compartment, arranged in a series conforming to the number of compartments in the tank.

Weldco Tanks are made in a wide range of sizes and types. There's a tank for every purpose, whether light, medium or heavy duty. No matter what the make of truck you intend using, we have a standard Weldco Tank that is adapted to it. There is no danger of truck depreciation because of Weldco overload. Our engineers will tell you your exact needs.

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THE YOUNGSTOWN WELDING CO.

530 RAYEN AVE., YOUNGSTOWN, OHIO

(Welders Since 1912)

Week's Price Changes In Tank Wagon Markets

TULSA, Dec. 30.—Effective Dec. 28, Magnolia Petroleum Co. reduced gasoline and kerosene 2 cents a gallon at both tank wagon and filling station. The general level of common point territory is now 16 cents wholesale and 19 retail. Kerosene is 11 cents. In differential territory, gasoline tank wagon and service station prices are 17 and 20 cents, respectively, and kerosene 12 cents.

Changes were not made at important marketing points such as Dallas, El Paso, Fort Worth and San Antonio where competitive conditions had previously caused reductions to or below the present general price level. Through typographical error, Oklahoma City gasoline prices were carried as 16 and 19 cents in issues of Dec. 20 and 27 of **National Petroleum News.** Prices were cut to 15 and 18 cents Nov. 21.

* * *

DENVER, Dec. 29.—The Continental Oil Co. on Dec. 27 reduced the tank wagon and service station prices of gasoline ½ cent at Albuquerque, N. M.

SAN ANTONIO, Dec. 27.—Two San Antonio refineries are installing the Fleming process stills for cracking. The Grayburg Refining Co. is installing two stills, and the Eggleston Oil & Refining Co. one still, additional to their regular equipment.

Still Use Gasoline

WASHINGTON, Dec. 28.—Prickly pear juice and other gasoline substitutes are not making serious inroads into gasoline consumption in South Africa, according to U. S. Trade Commissioner P. J. Stevenson at Johannesburg, as imports have greatly increased and consumption figures for 1921 and 1920 are far above the average for the last five years. Some of the imports went toward the building up of stocks which were depleted during the war. This building up is indicated by the slight decline in imports in the first six months of this year. More than half of the imports are from the United States. The Dutch East Indies rank second. Imports into the Union of South Africa in 1921 and 1920 were: (Amounts in imperial gallons, equal to 1.2 U. S. gallons.)

1920

(Imported from—)	(Gallons)	(Value)
United States	6,567,179	831,681
Dutch East Indies	4,076,469	523,028
Other countries	*367,855	*52,596
Total	11,011,503	1,407,305

1921

	(Gallons)	(Value)
United States	6,331,459	797 205
Dutch East Indies	5,004,806	664 257
Other countries	2,915	808
Total	11,339,180	1,462,270

*Mainly from Egypt.

Tank Wagon, Service Station Markets
Gasoline and Kerosene

BELOW are given in cents a gallon service station and tank wagon quotations on gasoline and tank wagon quotation for kerosene, as quoted by the Standard Oil Companies, the points at which prices are given being arranged by Standard Oil Marketing districts. By tank wagon price is meant the price to reselling agents and not the price from the tank wagon to consumers

S. O. NEW JERSEY DISTRICT

	Gasoline T.W Jan. 2	Gasoline S.S. Jan. 2	Oil T.W. Jan. 2
Atlantic City, N.J	21.5	24.5	14
Newark, N J	21.5	24.5	14
Annapolis, Maryland*	22.5	24.5	14
Baltimore, Md	21.5	23.5	13
Cumberland, Md	23	25	15
Washington, D. C	21	23	13.5
Danville, Va	20.5	22.5	15
Norfolk, Va	19.5	21.5	13
Richmond, Va	22	24	13.5
Roanoke, Va	22	24	15
Petersburg, Va	22	24	14.5
Charleston, W Va	20.5	22.5	13.5
Clarksburg, W. Va	21	23	14.5
Keyser, W. Va	22	24	15
Parkersburg, W. Va	20	22	12
Wheeling, W. Va	20	22	13.5
Charlotte, North Carolina*	19	21	14.5
Hickory, N C	19.5	21.5	15
High Point, N. C	19.5	21.5	15
Mt. Airy, N. C	19.5	21.5	15
Salisbury, N. C	19.5	21.5	15
Charleston, S. Carolina*	18	20	12
Columbia, S. C	20	22	14

S. O. NEW YORK DISTRICT

†New York	22	24	15
Albany, N. Y	22	24	14
Buffalo, N. Y	22	24	15
Rochester, N. Y	22	25	13
Syracuse, N Y	20	22	13
Boston, Mass	22	24	14

†Note—Prices in Steel Barrels.

ATLANTIC REFINING DISTRICT

Pittsburgh, Pennsylvania*	21	24	14
Philadelphia, Pa	21	24	14
Dover, Del	21	24	14
Wilmington, Del	21	24	14
Providence, R I	22	25	15
Springfield, Mass	22	24	15
Worcester, Mass	22	25	15
Hartford, Connecticut*	22	25	15
New Haven, Conn	22	24	15
Boston, Mass	22	24	15

Note—The five New England towns named above are the principal Marketing points in Atlantic Refining Company's New England territory S. O. New York also markets at these points

S. O. OHIO DISTRICT

Cleveland, Ohio	19	21	13

Note—Tank wagon markets at all points in Ohio are the same as for Cleveland.

S. O. KENTUCKY DISTRICT

Lexington, Kentucky*	20	22	14
Louisville, Ky	19	21	13
Covington, Ky	19	21	13
Jackson, Mississippi*	17.5	19.5	12.5
Natches, Missss	17	19	13.5
Vicksburg, Miss	17	19	13.5
Birmingham, Alabama*	17	19	15
Mobile, Ala	16	18	14.5
Montgomery, Ala	17	19	16
Atlanta, Georgia*	19	21	16
Augusta, Ga	19	21	16
Macon, Ga	19	21	16
Savannah, Ga	18	20	14
Jacksonville, Fla	17	19	14
Miami, Florida*	20	22	16.5
Tampa, Fla	17	19	14

S. O. LOUISIANA DISTRICT

Camden, Arkansas*	17	19	14
Little Rock, Ark	17	19	14
Alexandria, Louisana*	17	19	14
Baton Rouge, La	15.5	17.5	12.5
Lake Charles, La	16	18	14
New Orleans, La	16	18	13
Shreveport, La	15	17	12
Bristol, Tenn	17.5	19.5	16
Chattanooga, Tenn	16	18	15.5
Knoxville, Tenn	17	19	16
Nashville, Tenn	15.5	17.5	15.5
Memphis, Tenn	15.5	17.5	15

MAGNOLIA PETROLEUM DISTRICT

	Gasoline T.W Jan. 2	Gasoline S.S. Jan. 2	Oil T.W. Jan. 2
Muskogee, Okla	16	19	10
Oklahoma City, Okla	15	18	10
Tulsa, Okla	16	19	10
Pine Bluff, Arkansas*	17	20	14
Fort Smith, Ark	18	21	12
Little Rock, Ark	17	19	14
Texarkana, Ark	18	21	13
Amarillo, Texas	17	20	12
Dallas, Texas	16	19	11
El Paso, Texas	17	20	12
Fort Worth, Texas	12	15	11
Galveston, Texas	16	19	11
Houston, Texas	16	19	11
San Antonio, Texas	15	18	10

S. O. INDIANA DISTRICT

Chicago, Ill	18	20	11.5
Decatur, Ill	18.8	20.8	12
East St. Louis, Ill	17.45	19.7	11.1
Joliet, Ill	18	20	12.3
Peoria, Ill	18.8	20.8	12
Quincy, Ill	18.6	20.6	11.8
Evansville, Ind	18.6	20.6	12
Indianapolis Ind	18.8	20.8	12.2
South Bend, Ind	19	21	12.4
Detroit, Mich	19.4	21.4	12.7
Grand Rapids, Mich	19.3	21.3	12.6
Saginaw, Mich	19.5	21.5	12.8
La Cross, Wis	19.8	21.8	12.9
Madison, Wis	19.9	21.9	12
Milwaukee, Wis	18.6	20.6	11.7
Duluth, Minn	19.8	21.8	13.1
Mankato, Minn	19.4	21.4	12.9
Minneapolis, Minn	19.5	21.5	13.1
Davenport, Ia	19.1	21.1	12.4
Des Moines, Ia	19.1	21.1	12.4
Sioux City, Ia	18.7	20.7	12
Kansas City, Mo	17.5	19.5	10.8
St. Joseph, Mo	18.9	20.9	11.7
St. Louis, Mo	18.2	20.5	11.5
Fargo, N. D	22.8	24.8	15
Minot, N. D	24.8	26.8	17
Huron, South Dakota*	21.6	23.6	13.6
Pierre, S. D	21.6	23.6	13.6
Wichita, Kan	18.4	20.4	11.3
Bartlesville, Okla	17.5	19.5	10.4

S. O. NEBRASKA DISTRICT

Crawford, Neb	19.25	†	13.75
Omaha, Neb	18.25	20.25	12.25

CONTINENTAL OIL DISTRICT

Denver, Colorado*	18	20	13.5
Glenwood Springs, Colo	23	†	18.5
Pueblo, Colo	18	20	13.5
Basin, Wyo	17	†	14
Casper, Wyo	14.5	16.5	12
Cheyenne, Wyo	17	19	13.5
Cody, Wyo	19	†	16
Lander, Wyo	17	†	14.5
Billings, Montana*	20	22	15.5
Butte, Mont	21.5	23.5	16
Great Falls, Mont	21.5	23.5	17
Helena, Mont	21.5	23.5	17
Miles City, Mont	21	23	16.5
Ogden, Utah	20.5	22.5	16.5
Salt Lake City, Utah	20.5	22.5	15.5
Boise, Idaho	22	24	19
Albuquerque, New Mexico*	23	25	17.5

†Indicates points at which Continental Oil Co. maintains no service stations.

S. O. CALIFORNIA DISTRICT

Phoenix, Arizona*	22.5	25.5	21.9
Los Angeles, Cal	19	22	15.5
Fresno, Cal	19.5	22.5	17.5
San Francisco, Cal	19	22	15.5
Reno, Nev	22.5	25.5	19
Portland, Oregon*	22	25	16.5
Seattle, Washington*	21	24	16.5
Spokane, Wash	24.5	27.5	20.5
Tacoma, Wash	21	24	16.5

*Note—Besides the inspection fees collected from oil marketers, which vary from one-eighth of a cent to 1 cent and a half a gallon in different states, 18 states levy an additional tax on gasoline, usually for road purposes. In Oregon, and South Carolina the tax is 2 cents a gallon. It is 1 cent a gallon in Arizona, Arkansas, Colorado, Florida, Georgia, Alabama, Kentucky, Montana, Mississippi, Maryland, New Mexico, North Carolina, South Dakota and Washington. It is included in the tank wagon price in those states. Pennsylvania, Connecticut and Louisiana the 1 cent road tax is collected separately.

Holiday Export Demand Is Light; Prices Steady For Most Products

By Special Correspondent
NEW YORK, Jan. 2

EXPORT demand for petroleum products was light last week. Not one cargo sale came to the surface. Gasoline is unusually quiet because considerable shading is reported to be going on in the vicinity of the Gulf. Foreign buyers have been inquiring around local circles bidding around 13½ cents in bulk New York for new Navy, but many of the leading refiners refuse to sell below 14½ cents, and few are willing to do business at the latter level.

A little oil is moving abroad on old orders, but foreign buyers are more reluctant to anticipate demand and the unsettled political conditions abroad have also tended to depress the export market. Several New York observers believe foreign consumers are awaiting developments in the foreign loan situation, and should this government decide to assist Germany, an improved demand from that country is expected to develop. There is still an acute shortage of barrels throughout Germany and whereas barrels sold for 30 cents a little over four months ago, they are now at a premium and are scarce at $1.10 each. It is said that virtually all of the small oil jobbers throughout central Europe have disappeared, and the big companies are now marketing virtually all of the oil being imported.

Local refiners view the present dull spell as normal for this time of the year. However, a resumption of foreign buying along generous lines is expected to take place before Jan. 15. The fact that there is so much shading going on tends to discourage foreign buying as the average European is content to hold off until there are indications of an improvement in the domestic oil situation. That export prices as quoted by leading refiners are almost entirely nominal, is generally believed by the trade. Cased gasoline is held at $2.73 a case but offerings have been made openly at around $2.60.

French buyers are more inclined to purchase high grade lubricants but business last week was confined to a few hundred barrels here and there and nothing really worth while came to the surface of the market. Small holders along the Atlantic seaboard are not so pessimistic regarding the future as had been expected and are confident there will be a marked improvement in the general situation soon. The fact that there is much less Mexican oil coming in has improved sentiment, and while considerable shading is going on this is more or less due to a shortage of storage space rather than a desire to dispose of stocks.

There have been several cargo inquiries for high gravity gasoline for January shipment to the United Kingdom and while there are negotiations going on for the sale of 7,000 tons of 64 gravity gasoline, no sales of sizeable proportions came to light. The Far East is inquiring freely for cased gasoline and kerosene but is slow in placing orders. Most of the oil moving to the Orient at present is against orders placed some time ago.

Lubricating oils have been flat for some time past, and reports had it that one lot of 600 steam refined western stocks was offered at 12¾ cents in barrels New York. This was probably distress oil. Many of the refiners are asking around 17 cents for this grade of oil.

British Importations

During the week ended, Dec. 11, there were imported into the United Kingdom, 20,747,070 gallons of petroleum and products. Among the larger importations at London were: 2,457,090 gallons of kerosene in bulk to the Anglo-American Oil Co., from New York; 860,160 gallons of kerosene in bulk to the Caucasian Oil Co. from Wilhelmshaven; 1,271,610 gallons of fuel oil in bulk to the Shell Marketing Co. from Tampico; 1,398,810 gallons of gas oil in bulk to the Anglo-American Oil Co. from Baton Rouge, and 1,244,190 gallons of fuel oil in bulk from Tampico to the Anglo-Mexican Petroleum Co.

At Liverpool the Anglo-American Oil Co., Ltd., received 1,346,730 gallons of kerosene and 427,670 gallons of lubricating oil in bulk from New York. At Bristol the Shell Marketing Co. received 1,048,500 gallons of gasoline in bulk from Abadan. At Hull, the Shell company received 428,050 gallons of gasoline from Balik Pappan. The Anglo-American Oil Co. received 2,346,450 gallons of kerosene and 1,561,110 gallons of gasoline in bulk also from Baton Rouge. The Anglo-Mexican Co. received 640,560 gallons of gasoline and 951,400 gallons of kerosene in bulk from Tampico. At Manchester the Anglo-American Oil Co. received 1,847,090 gallons of gasoline from Baton Rouge and the Shell Marketing oC. received 838,570 gallons of fuel oil in bulk from Tampico. The only large arrival at Sunderland was 324,840 gallons of gas oil in bulk from Port Arthur. At Belfast the Anglo-American Oil Co. received 712,170 gallons of kerosene in bulk from Philadelphia.

Mexican Products

The following prices are quoted by eastern seaboard Independent refineries on products which are manufactured almost entirely from Mexican crude transported from Tampico to the refinery by tanker.

	Jan. 2
*Gasoline (New Navy) gal.	14½
†Bunker oil (F.A.S New York) bbl.	1.45
Gas Oil (36-40 refinery) gal.	.05
‡Kerosene, 45-150 W. W. Bulk Del., N. Y nom	.09

*Delivered
‡Nominal
†Plus .06½ lighterage charge.

Export Markets

Furnished to N. Y. Produce Exchange by big exporting oil companies

Illuminating Oils

	Jan. 2	Dec. 26
Bulk, gal., Bayonne	7.00	7.00
Barrels, gal., Bayonne, cargo	13 25	13 25
Cases gal. Bayonne	16.50	16.50

Prices for water white oil (150 test) are 1 cent higher than those for standard white.

Gasoline-Naptha (Cents per Gallon)

U. S. Navy, bulk	15.50	15.50
U. S. Navy, cases	28.75	28.75
Export grade, bulk	18 00	18.00
63-66 deg. bulk	21 00	21.00
66-68 deg. bulk	22.00	22.00

Tide Water Oil Company (f. o. b. Bayonne)

59-61 deg. bulk	15 50	15.50
59-61 deg. cases	28 75	28.75
Export grade, Navy Specifications bulk	15.50	15.50
63-65 deg. bulk	21 00	21 00
68-72 deg. bulk	22 00	22.00
Standard white 110	7 00	13.25 16.50
Water white 150	8.00	14.25 17.50

The Texas Company

Gasoline, cases		28 75	28.75
Kerosene	Bulk	Barrels	Cases
Standard White	7 00	13 25	16 50
Prime White	7.50	13.75	17.00
Water White	8.00	14 25	17.50

Gasoline and Kerosene

Inquiries for three cargoes of gasoline, two for new Navy and one for 64 gravity were reported but no actual sales were heard of. Foreign buyers ideas are somewhat out of line with those entertained by New York sellers, and refiners here believe a little business is passing to the Gulf territory, as gasoline is available at a low figure there. New Navy gasoline in bulk, has been offered for export at as low as 13 cents, it is reported. In bulk delivered in tank cars, New York, it is understood offerings have been at 15 cents while export business could have been done at 14½ cents. Many leading refiners refuse to compete with southern sellers and are awaiting developments.

Kerosene is dull and unchanged. Two cargo inquiries were received here but no actual sales developed, and the market was purely a holiday affair. There is talk of another cut in export prices because of the large stocks. Cased kerosene is also quiet. The inquiry from the Far East is active but buying is below expectations. Exporters report difficulty in securing freight space to the Orient.

Gas and Fuel Oils

Prices for both gas and fuel oils are weak. There is a better domestic demand for bunker oil at the unchanged price of $1.45 a barrel f. o. b. New York harbor refinery, but export buyers are inclined to buy but sparingly at present. Rumors of cargo sales were current but no confirmed transactions of consequence came to light. The lighter fuel oils are steady but dull.

Gas oil 36-40 is quiet at 5 cents in bulk at the refinery. There is a good demand for 26-28 but most orders are confined to small quantities.

Lubricants and Waxes

Lubricant prices are too nominal to quote. Western cylinder stock, 600 steam refined is available at 14½ cents in barrels New York while it was reported that one lot was offered at 12½ cents early in the week. Pale oils are flat and there is little or no export demand. High grade lubricants have been enjoying a good inquiry, principally from French buyers but little business has developed.

Waxes are quiet; demand is slack, and prices are soft. White crude scale 122-124 Amp. is held at 2¾ cents a pound, 124-126 at 2⅞ cents, and fully refined 118-122 at 3 cents. Match 105-108 was held at 3 cents. The petrolatable at 11½ cents a pound and lily white at 9¼ cents. The medicinal oils are dull. For 880-885 the asking price is $1.15.

Turpentine Is Higher; Benzol Is Still Scarce

By Special Correspondent

NEW YORK, Dec. 30.—Spirits of turpentine advanced fairly sharply this week, and on Saturday leading marketers were demanding $1.47½ cents a gallon. Linseed oil was firm and unchanged at 90 cents. The chemicals were quiet but it is reported that on Jan. 2, the price of bleaching powder will be advanced 10 cents a hundred pounds. Animal and fish oils were quiet and a trifle softer.

Chemicals

Bleaching powder was very firm and leading producers are asking 1.90 cents a pound for shipment over the first quarter of 1923 but it is generally expected that this price will be raised to 2 cents before the end of the week. Caustic soda prices are well maintained as domestic buyers are also showing a keener interest. Small lots are held at 3¾ cents a pound and on contract at 2½ cents a pound basis 60 per cent. works in carlot quantities. Soda ash is steady and unchanged. Light 58 is held at 1.75 cents in carlots on spot, single bags. The price in barrels is 1.95 cents. Leading producers are asking 1.20 cents for light ash in single bags and 1.40 cents in barrels, basis 48 per cent works.

Sulphuric acid is weak, due to keen competition. Demand is not good and downward price readjustments in this product are expected.

There is still a scarcity of benzol. There have been offerings of spot goods at Philadelphia at 32 to 33 cents in drums. Production is increasing and the supply is expected to be better next week.

Oils and Naval Stores

Linseed oil was a dull affair throughout the week. Most local crushers are asking 90 cents for spot oil; 87 cents for January; 86 cents for February; 85 cents for March, and 84 cents for April oil, in barrels carlots cooperage basis. May-August oil is held at 83 cents but can probably be had on a firm bid at a little below this price. Reports were current late in the week that one large crusher was offering March oil at 75 cents in tank cars but confirmation was lacking. Buyers show little disposition to take on much oil at those prices.

Both soya bean and perilla oils were devoid of new feautre. The animal oils were a trifle easier although without material change while the fish oils are dull. Crude menhaden oil is easier at 48 cents f. o. b. plant, in tank cars. Pressed oils are dull.

Naval stores have been firmer and more active. Spirits of turpentine in barrels ex yard is now held at $1.47½ a gallon. Rosins are firmer and the demand is a little better.

LOS ANGELES, Dec. 27.—New contracts for delivery of fuel oil to Orient ports secured recently by the Standard Oil Co. of California, have made it necessary for this company to call on the Standard Transportation Co., a subsidiary of Standard Oil Co. of New York, for six large tankers, each having a capacity of approximately 100,000 barrels. These vessels are now in service making deliveries out of the Richmond, Cal., refinery.

Refiners' and Jobbers' Supplies

Following are the average market prices for the week on the principal materials used by refiners and jobbers, f. o. b. shipping point as effective this date.

		Jan. 2	Dec. 26
Benzol			
Pure Water White	gal.	$.39-.43	$.39-.43
90%	gal.	.37-.40	.37-.40
90% Spot	gal.	.40-.42	.40-.42
Refiners' Supplies			
Soda Ash light	cwt.	$1.75-2.10	$1.75-2.10
Silicate of Soda 60 deg.	cwt.	2.00-2.25	2.00-2.25
Sal. Soda	cwt.	-1.10	-1.10
Caustic Soda 75%	cwt.	3.50-3.60	3.50-3.60
Chloride of Lime	cwt.	2.25-2.50	2.25-2.50
Sulphuric Acid 60 deg.	cwt.		
deg tank cars f. o. b. shipping point	per ton	9.00-9.50	9.00-9.50
Jobbers' Supplies (Open Market)			
Vegetable Oils—			
Linseed, carloads	gal.	-.90	-.90
Less carload	gal.	-.93	-.93
5 Bbls. or less	gal.	-.96	-.96
Boiled, tank	gal.	-.88	-.88
Boiled, carloads	gal.	-.92	-.92
Soya Beans Spot, bbls.	gal.	*-.10¾	-.10¾
Animal Oils—			
English Degras	b.	$.04¾	$ -.04¾
Domestic Degras, bbls. carloads	lb.	-.04¼	-.04¼
Horse	lb.	-.07¾	-.07¾
Oleic Acid—			
Dist	b.	-.10	-.10
Saponified	b.	-.10	-.10
Lard Oils—			
Prime Winter Strained 1 to 1½ ffa. 40/45c.t.	lb.	$.14	$.13¾
Extra Winter Strained 2 to 4½ ffa. 40/45c.t.	lb.	.13	.13
Extra 4 to 5 ffa. 40/45c.t.	lb.	.12¼	.12
Extra No 1 7 to 10 ffa. 40/50c.t.	lb.	.12	.11
No. 1 15 to 18 ffa. 40/45c.t.	lb.	.11	.10½
Special No. 1 18 to 20 ffa. 40/45c.t.	lb.	.11½	.10
No. 2 22 to 25 ffa. 40/45c.t.	lb.	.10¾	.09½
Prime Edible Tallow under 1¼ ffa. 40/45c.t. N.Y.	lb.	.10	.09
Tallow acidless	gal.	.11¼	.10¼
Lard Stearine	lb.	.13	.14
Oleo Stearine	lb.	.09¾	.10
Neatsfoot Oil—			
20 degree F. cold test under 1% ffa.	Lb.	1.25	1.25
30 degree F. cold test under 1% ffa.	lb.	1.05	1.05
40 degree F. cold 12-15½—1% ffa.	lb.	.90	.85
Fish Oils—			
Menhaden Oil Light pressed, Tanks	gal.	$.60	$.60
Brown, bbls.	gal.	.58	.58
Yellow bleached, Tanks	gal.	.62	.62
Herring, tank cars coast		.42	Nominal
Whale, extra winter bleached	lb.	.73	.73
Seal			Nominal
Naval Stores—			
Turpentine, N. Y.	gal.	1.47½	1.36
Turpentine†	gal.	1.38½	1.30
Rosin B. N. Y.	bbl.	6.05	6.05
Rosin F. N. Y.	bbl.	6.30	6.15
Rosin B.†	bbl.	5.00	4.82½
Rosin F.†	bbl.	5.00	4.82½
Rosin Oil 1st run	gal.	.43	.43
Rosin Oil 2nd run	gal.	.47	.47
Pine Tar			
Kiln Burnt	bbl.	12.50	12.50
Retort	bbl.	12.00	12.00

†Savannah, Ga., market.

New Orleans Refineries Plan Enlarging Plants

By Special Correspondent

NEW ORLEANS, LA., Dec. 30.—There will be many radical changes in marketing programs in this district in 1923, according to sales managers of leading refineries. Marginal contracts, it is believed, are a thing of the past. It can be stated authoritatively that few, if any, marginal contracts for gasoline will be signed to run over 1923.

It is reported that the New Orleans Refining Co. is planning to enlarge its refinery above the city. This company is a Royal Dutch-Shell interest and has a substantial business. In fact, the New Orleans Refining Co. was generally oversold in 1922 on its refined products.

Another refiner whose plant will be enlarged is the Chalmette, which is allied with the Louisiana Oil Refining Corp. of Shreveport and the Invincible interests. At present, the Chalmette plant runs about 400 barrels daily. It is announced that company plans to increase its daily capacity to 2500 barrels.

The Liberty Oil Co., which operated a refinery of 1200 barrel capacity within the city limits of New Orleans, and which is headed by T. C. Anderson, is planning to change its type of equipment. This company, according to Mr. Anderson, will install a cracking process.

There are numerous reports in connection with Smackover crude. It is said that a barge line will be in operation shortly to bring Smackover oil to New Orleans. While there is plenty of oil at Smackover, little of it has found its way to New Orleans, refiners here using only Mid-Continent or Mexican crude.

The Mexican situation is muddled considerably. There has been little Mexican crude shipped here recently from Tampico which accounts for the fact that some refiners here that run only Mexican oil have been forced to shut down at times. No definite announcements have been made in this connection.

G. M. Stein, sales manager here for the Mexican Petroleum Corp. is now in New York. The Mex Pet has a 20,000 barrel refinery above New Orleans on the river and has carried little oil on hand, due to export orders and a steady domestic business. It is possible that the Mex Pet people will be forced to run a grade other than Mexican, if imports from Tampico continue at their present rate.

Four cargoes cleared this week and three were received. All of the outgoing shipments excepting one were for foreign consumption, the tankers clearing for London, Brest, Charleston and Avonmouth.

Shipments during the week were as follows:

Imports

13,000 barrels Venezuelan fuel oil from Curcas to order; 35,000 barrels crude from Tampico to order; 15,000 barrels crude from Tampico to Huasteca Petroleum Corp.;

Exports

3,000,000 gallons gasoline to London; 1,240,000 gallons gas oil to Brest; 4,620,000 gallons crude to Charleston; 2,225,000 gallons naptha and 2,750,000

gallons refined oil to Avonmouth, England.

Export prices quoted by Liberty Oil Co. are as follows:

150 degree test water white kerosene, Luz del Mundo, in white wood cases, containing 2—5 gallon cans, $1.60 a case. 150 degree test water white kerosene, Luz del Mundo, in white wood cases, containing 10—1 gallon cans, $3.20 a case. Kerosene, 150 degree test water white, Luz del Mundo in barrels, (wooden), $.14½ a gallon. Kerosene, 150 degree test water white, Luz del Mundo in iron barrels, bulk, $.12 a gallon. Liberty Pep gasoline, 58 to 60 degrees gravity, in cases containing 2—5 gallon cans, $2.35 a case. Liberty Pep gasoline, 58 to 60 degrees gravity, in iron barrels, bulk, $.16 a gallon.

S. Texas Market Unchanged

(Complete Refinery prices, page 91)

HOUSTON, Dec. 30.—The holiday lag extended over this week's markets in the south Texas lubricant manufacturing district. Sales were scattered and prices unchanged from the level of recent weeks. The lighter viscosity oils are in greatest demand to such extent as demand can be said to exist. The higher viscosities move slowly with 500 in the lead.

Possible market adjustments after the turn of the new year lead some manufacturers to take a more optimistic view of conditions within the next 60 days but these appraisals of the situation are more theoretical than actual for the present. In part they are based upon anticipated greater demand from export outlets.

68—70 350 E. P.
66—68 360 E. P.
64—66 380 E. P.
60—62 400 E. P.
58—60
Straight Run Gasoline
Casinghead and Absorption Gasoline
Blended Gasolines
Any Gravity
KEROSENE
DISTILLATES
GAS OIL
FUEL OIL
ROAD OIL
PACIFIC REFINING COMPANY
108-9 Mid-Co Bldg., Tulsa

CRUDE OIL PRICES

EASTERN FIELDS

	1923 Jan. 2	1921 High	1921 Low	1920 High	1920 Low
Pennsylvania	$3.25	Jan. 1 $6.10	June 29 $2.25	Mar. 2 $6.10	Jan. 1 $5.20
Cabell	2.11	Jan. 1 4.46	June 29 1.11	Oct. 11 4.46	Jan. 1 3.40
Corning	1.75	Jan. 1 4.00	June 29 4.20	May 15 4.25	Jan. 1 3.50
Somerset	1.96	Jan. 1 4.50	June 29 1.00	Oct. 11 4.50	Jan. 1 3.25
Somerset Light	2.21	Jan. 1 4.25	June 29 .90	Sept. 23 4.25	Jan. 1 3.25
Ragland	1.00	Jan. 1 2.60	June 29 .60	Sept. 23 2.60	Jan. 1 1.75

Somerset prices include advance of 6 cents on oil run on and after Oct. 1

CENTRAL STATES FIELDS

Wooster	$1.90	Jan. 1 $4.05	June 27 $1.80	Mar. 10 $4.05	Jan. 1 $3.45
Lima	1.98	Jan. 1 3.73	June 27 1.58	Mar. 10 3.73	Jan. 1 2.98
Indiana	1.78	Jan. 1 3.63	June 27 1.58	Mar. 10 3.63	Jan. 1 2.88
Princeton	1.77	Jan. 1 3.77	June 27 1.27	Mar. 10 3.77	Jan. 1 3.02
Lodi	2.10	Jan. 1 4.00	June 27 1.80	Dec. 4.00	July 4.00
Illinois	1.77	Jan. 1 3.77	June 27 1.27	Mar. 10 3.77	Jan 1 3.02
Waterloo, Ill	1.25	Jan. 1 1.75	June 27 .75		
Plymouth	1.15	Jan. 1 3.48	June 27 .65	Mar. 3 3.48	Jan. 1 2.78
Canadian Petrolia	2.38	Jan. 1 4.13	June 27 1.98	Mar. 10 4.13	Jan. 1 3.30
Western Ky	1.90	Dec. 1 2.40	June 27 .58		

MID-CONTINENT AND NORTH TEXAS FIELDS

Effective Nov. 22, the Prairie Oil & Gas Co. revised the posted price of Mid-Continent and north Texas crudes it purchases by classifying them according to gravity and fixing prices for them on that basis.

Below 28	.90	33-34.9	1.25
28-29.9	1.00	35-36.9	1.40
30-32.9	1.10	37-38.9	1.60
		39 and above	1.80

Other companies followed at once except Magnolia which posted its schedule on Nov. 25. On Healdton crude, where Prairie does not buy, Sinclair made the gravity schedule effective Nov. 22, but after paying the new price of 90 cents for three days, restored it to 75 cents in conformity with the Magnolia's price. The same thing happened to the Fox field, Carter county, but Sinclair restored this to the gravity basis Dec. 1.

On Dec. 11, Magnolia posted new prices for Oklahoma low grade oils where this company has pipe lines, Three grades differ from the Prairie schedule, as follows:

Under 28	.65	33—34.9	1.25
28—32.9	1.10		

NORTH LOUISIANA FIELDS

Effective Dec. 5, Standard Oil Co. of Louisiana changed the gravity schedule on Caddo, Homer, Haynesville, La., and El Dorado, Ark., crude. The new prices were met on Dec. 6 by the Gulf Refining Co. of Louisiana and The Texas Co. Bull Bayou was not changed, nor Crichton, Bellevue, De Soto and Smackover, Ark The new schedule is as follows:

CADDO, HOMER, HAYNESVILLE, EL DORADO

Below 30	.75	35 to and including 36.9	$1.40
30 to and including 32.9	$1.10	37 to and including 38.9	1.60
33 to and including 34.9	1.25	39 degrees and above	1.80

BULL BAYOU

32 to and including 34.9	$1.25
35 to and including 37.9	1.30
38 degrees and above	1.40

Other prices in this district are:

De Soto	$1.60
Crichton	1.25
Bellevue	.75
Smackover, Ark	.30

GULF COASTAL FIELDS

Spindletop	$1.25	Jan. 1 $2.50	June 13 $ .80	Apr. 15 $3.00	Jan. 1 $1.50
Goose Creek	1.25	Jan. 1 2.50	June 13 .80	Apr. 13 3.00	Jan. 1 1.50
Sour Lake	1.25	Jan. 1 2.50	June 13 .80	Apr. 13 3.00	Jan. 1 1.50
Humble	1.25	Jan. 1 2.50	June 13 .80	Apr. 13 3.00	Jan. 1 1.50
Batson	1.25	Jan. 1 2.50	June 13 .80	Apr. 13 2.75	Jan. 1 1.50
Hull	1.25	Jan. 1 2.50	June 13 .80	Apr. 13 3.00	Feb. 18 2.00
West Columbia	1.25	Jan. 1 2.50	June 13 .80	Apr. 13 3.00	Jan. 1 1.50
Edgerly	1.25	Jan. 1 2.50	June 13 .80	Apr. 13 3.00	Jan. 1 1.50
Vinton	1.25	Jan. 1 2.50	June 13 .80	Apr. 13 3.00	Jan. 1 1.50
Jennings	1.25	Jan. 1 2.50	June 13 .80	Apr. 13 3.00	Jan. 1 1.50
Dayton	1.25	Jan. 1 2.50	June 13 .80	Apr. 13 3.00	Jan. 1 1.50
Saratoga	1.25	Jan. 1 2.50	June 13 .80	Apr. 13 3.00	Jan. 1 1.50
Somerset (Texas)	1.25	Jan. 26 2.00	May 28 1.25		

WYOMING FIELDS

Elk Basin	$1.50	Jan. 1 $3.10	June 27 $1.00	Mar. 16 $3.10	Jan. 1 $2.35
Grass Creek	1.50	Jan. 1 3.10	June 27 1.00	Mar. 16 3.10	Jan. 1 2.35
Big Muddy	1.05	Jan. 1 2.75	June 27 .50	Mar. 16 2.75	Jan. 1 2.60
Salt Creek	1.05	Jan. 1 2.75	June 27 .50	Mar. 16 2.75	Jan. 1 2.00
Lance Creek	1.50	Jan. 1 3.05	June 27 .95	Mar. 16 3.05	Jan. 1 2.30
Rock Creek	1.15	Jan. 1 2.85	June 27 .60	Mar. 16 2.75	Jan. 1 2.00
Osage	1.50	Jan. 1 3.05	June 27 .95		
Cat Creek, Mont	1.50	Jan. 1 3.10	June 27 1.00		

CALIFORNIA

SAN JOAQUIN VALLEY AND WHITTIER-FULLERTON FIELDS

14-17.9	$ .60	23-23.9	$ .80	30-30.9	$1.45
18-18.9	.60	24-24.9	.88	31-31.9	1.57
19-19.9	.60	25-25.9	.96	32-32.9	1.65
20-20.9	.63	26-26.9	1.05	33-33.9	1.75
21-21.9	.67	27-27.9	1.15	34-34.9	1.85
22-22.9	.73	28-28.9	1.25	35 and above	1955
		29-29.9	1.35		

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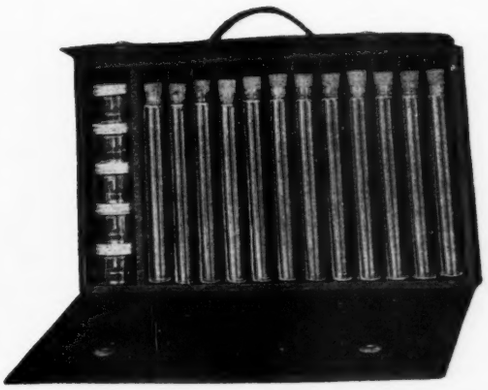

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OIL FINANCE

California Pet. To Take Over Production Company

LOS ANGELES, Dec. 28.—The California Petroleum Corp. has decided to issue $2,500,000 of 7 per cent cumulative preferred stock and $2,500,000 of common stock to be exchanged for the $1,000,000 capital stock of the Western Star Oil Co., a producing organization with developed leases in the Signal Hill, Santa Fe Springs, and Huntington Beach fields of California. The market value of this amount of California Petroleum stock is around $3,750,000 at present.

The Western Star company, formed last February, owns 200 acres of proven and prospective oil land. Its production in October amounted to 310,997 barrels, an average of slightly more than 10,000 barrels a day. The geological and engineering departments of the California corporation report the value of Western Star producing lands and leases to be $4,827,900 based upon the estimated recoverable oil in proven holdings. The production of the Western Star for 1922 is estimated at 895,000 barrels.

The production of the California corporation and its subsidiaries early in November was 42,450 barrels a day. The total production of the corporation for the year is estimated by its engineers at 7,672,000 barrels, compared with 4,265,114 in 1921; 3,992,873 in 1920, and 3,379,488 in 1919.

The corporation has a crude and topped oil storage capacity of 2,210,200 barrels which will be increased to 2,935,200 barrels. It now has in storage 844,450 barrels of crude oil and 2,522 barrels of topped oil.

Cash For Union Holders

NEW YORK, Dec. 29.—It is probable that holders of common stock of the Union Oil Co., of Delaware will receive a cash dividend of about 20 cents a share when the affairs of that company are finally liquidated. Stockholders have already received one and a half shares of Shell Union Oil Corp. stock for each share of Union held. After making this distribution and the sale of two tankships, the company's assets are estimated at $1,016,001. Federal taxes, expenses for liquidation and sundry liabilities are placed at $729,177 which would leave a balance of $286,824 for distribution among the holders of the 1,389,418 shares of Union of Delaware.

NEW YORK, Dec. 30.—The Union Tank Car Co. has called for redemption $1,000,000 of its 7 per cent gold notes, series A, due August 1, 1922. Redemption will be made at the Equitable Trust Co. Feb. 1 at 102½.

Oil Dividends

	Amount	Payable	Stock of Record
Cumberland Pipe stock	100%	Dec. 30	Dec. 30
Midway Northern m	2%	Dec. 31	Dec. 20
Ventura Cons. q	75c	Feb. 1	Jan. 15

Financial Notes

South West Pennsylvania Pipe Lines.—Annual meeting of stockholders will be held at 2 p. m., Jan. 24, at Oil City, Pa.

Standard Oil Co. of Indiana.—Stockholders ratify increase in capital stock from $140,000,000 to $250,000,000 for the purpose of issuing a stock dividend payable to stock of record Dec. 28.

Cities Service Co.—Net earnings in November were $1,145,663 compared with $1,143,850 in November, 1921, and for the 12 months ended Nov. 30 were $14,125,234 compared with $13,548,574 the preceding 12 months.

United Oil Producers Corp.— Announcement made that the interest fund deposits for December on its 8 per cent participating bonds will be at the increased price of $1.80 a barrel for crude. The half year coupon, payable Jan. 25 will be worth around $8 instead of the guaranteed $4, the company says.

Pan-American Petroleum & Transport Co.—All shares sold on and after Jan. 2 on the New York Exchange must have attached due bills for the 20 per cent stock dividend. The stock was to have been sold ex dividend Dec. 29 but as delivery of the new certificates had not been made the board of governors ruled that due bills must be attached until delivery is made.

Paragon Refining Co.—Six new members are elected to the board of directors. Five of them represent the Cincinnati syndicate that recently took over the block of common stock that was held by the Gilliland Oil Co. These five are: E. W. Edwards, W. W. Freeman, W. F. Robertson; F. A. Geir, and R. E. Fields. This sixth new member is W. W. Knight of Toledo. The company reports a deficit of $355,000 for the year ended Oct. 31 after deductions for taxes, depreciation and depletion.

Cumberland Votes Increase

WINCHESTER, KY., Dec. 28.—Stockholders of the Cumberland Pipe Line Co. today approved increasing the capital stock of the company from $1,500,000 to $3,000,000 and directors thereafter declared a stock dividend of 100 per cent payable Dec. 30 to stock of record at the close of business that day.

Fractional shares will be issued only in the following cases: To each holder of a fractional share larger than one-half share a full share certificate will be issued; to each holder of a fractional share smaller than one-half share, a certificate for double the amount of the certificate held will be issued.

The certificates for the fractional shares must be sent to the transfer office of the company at Oil City, Pa., and be indorsed there by E. R. Shepard, vice president.

Cosden & Co. Earnings Exceed Million Monthly

NEW YORK, Dec. 29.—Cosden & Co. and subsidiary companies have earned an average of more than $1,000,000 a month this year after taxes and interest but before depreciation and depletion, according to the consolidated income account for the 10 months ended Oct. 31.

The company on Jan. 1 will retire all of its outstanding bonds which amount to $5,785,000. The sinking fund for these bonds, calling for 20 per cent of the net profits, resulted in heavy inroads on the profits, averaging more than $1,000,000 yearly. Thus more than 50 per cent of the $11,423,500 15-year convertible gold 6's have been retired through the sinking fund.

Funds to retire the remaining bonds were obtained through the sale of 187,000 additional shares of common stock at $41.

The consolidated balance sheet as of Oct. 31 shows the company to be in a strong financial condition. It follows:

Assets: Oil reserves, leaseholds, refineries, etc., $72,493,500, investments in affiliated companies $220,000, other investments $572,568, sinking fund investments $218,235, deferred charges $1,039,377 materials and surplus $1,770,019, crude and refined oils $2,928,394, advance payments for crude oil $58,633, notes and accounts receivable $4,620,889, cash $10,737,573; total, $94,659,188.

Liabilities: Preferred stock $6,996,440, common stock 1,195,454 shares of no par value $34,100,147, outstanding shares of subsidiary companies $125,116, bonded indebtedness $5,683,500, purchase money obligations $602,283, notes payable $800,000, accounts payable $1,653,045, accrued interest, taxes, etc., $439,925, accrued preferred dividends $81,648, depreciation reserve $11,585,260, unrealized portion of surplus arising from appreciation in value of oil reserves $10,386,120, surplus arising from operations $22,205,704; total, $94,659,188.

Mexican Seaboard Earnings

NEW YORK, Dec. 28.—The Mexican Seaboard Co's. net revenue before federal taxes, depreciation and depletion for the nine months ended Sept. 30 was $9,220,167. This does not include the earnings of the Mexican subsidiary, Cia International de Petroleo & Oleoductos. S. A., which for the same time netted $606,649 after expenses and reserves for amortization of pipe line plant and equipment. The Mexican Seaboard's income account for the nine months follows:

Gross	$21,695,758
Operating expenses	12,343,741
Balance	$9,352,017
Other income	222,128
Total income	$9,574,145
Debenture interest	353,978
Net revenue	$9,220,167

Transactions In Oil Shares On New York Stock Exchange

1921 High	1921 Low	1922 High	1922 Low	Listed Capital	Par Value	Stocks	Div. Rate	Last Paid	Transactions week ended Dec. 29 Sales	First	High	Low	Last	Ch'ge
107¾	91	135½	99	$40,000,000	100	Associated Oil	1½Q	Oct. 25,22	700	119½	119½	117	117	− 1¾
1125	820	1575	900	5,000,000	100	Atlantic Ref	5Q	Dec. 15,22						
113½	103⅜	119½	114	20,000,000	100	do pfd	1¾Q	Nov.1, 22	500	119½	*119½	119	119	0
27	21	56¼	19¾	13,000,000	25	Barnsdall Corp. A	.62½	Apr 30, 21	8,700	28½	31¼	28½	30¾	+ 2¾
55	14¾	39	17	3,712,300	25	do B	.62½	Apr.30, 21	2,500	19	19½	18½	18½	+ ¼
19¾	7¾	15⅝	6¾	150,000	N. P.	Caddo Central			4,100	7¼	7¾	†6¾	7⅜	+ ⅛
50¾	25	71¾	43⅜	14,877,000	100	California Pet	1¼	Oct. 1, 13	93,800	67¾	70¼	64⅞	67⅜	− ⅜
88	68½	98½	85	10,489,500	100	do pfd	1¾Q	Jan. 2, 23	800	93½	94⅞	93½	94	+ ½
44⅞	22½	53¼	31⅜	1,097,175	N.P	Cosden & Co	1.00Q	Nov. 1, 22	76,800	51⅜	53⅜	51⅜	53⅛	+ 1⅜
		102½	93½	6,998,000	100	do pfd	1¾Q	Dec .1.22	200	100	100¼	100	100¼	+ ¼
59½	39¾	80	45¾	252,835	N.P.	Gen. Amer. Tank	1½SA	Jan. 1, 23	3,700	68	68	65	65¼	− 2
		105½	96½	8,867,500	100	do pfd	1¾Q	Jan. 1, 23	400	100¾	101½	100¾	101½	
78⅛	39½	78¾	37¼	19,828,300	100	Gen. Asphalt			27,100	48¾	50	46¼	48⅞	0
117½	77	111	69	7,416,100	100	do pfd	1¼Q	Dec. 1, 22	600	79½	79½	78⅛	79	− 2½
91⅜	25	78	40	3,236,600	100	Gilliland pfd	2	May 15,21	100	45	45	45	45	− 1½
86	40½	91¾	61¼	25,000,000	100	Houston			8,100	70⅝	71⅞	67½	69⅜	− ⅝
7⅛	2	21¼	12⅜	6,250,000	25	Indiahoma Ref	‡.15	July1,21	3,000	14	14	†12⅞	13	− 1⅛
15¾	6½	11⅝	5¾	7,830,450	10	Indian Ref	.50	Dec.15,20	1,500	6¼	6½	6	6¼	− ⅜
80	80			2,296,400	100	do pfd	1¾	Dec.15,21						
26	5½	20¼	12⅛	999,980	N.P.	Invincible			8,000	14⅝	15⅛	14	14⅝	0
4¾	2	3	¼	25,709,510	10	Island Oil			12,800	⅜	½	¼	¼	− ⅛
9	4½	7½	1½	14,717,460	10	Kansas & Gulf			5,000	1½	1¾	1½	1¾	− ⅛
307⅛	125¾	463⅛	225⅛	927,515	N.P.	Marland Oil	1.00Q	Jan. 2,23	17,300	28	28¾	27⅞	28¾	+ ¾
167¼	84½	322	106¾	45,942,800	100	Mexican Pet	3Q	Oct.10,22	200	290	291	290	291	− 9
94	70	104	79¾	12,000,000	100	do pfd	2Q	Oct.2,22	100	108	108	108	108	+ 4
		34½	14½	441,291	N.P.	Mexican Seaboard	.50Q	Nov.27,22	10,600	17¾	17¾	16⅛	16½	− ⅝
		32⅛	12	261,000	N.P.	do V. T. C	.50Q	Nov.27,22	10,700	16¼	16½	15	15½	− 1½
16⅛	10	16	11	25,903,190	10	Middle States	.50Q	Jan.1, 23	15,900	11½	11½	11⅛	11⅜	− ⅛
4	1¾	4⅜	1¾	15,000,000	5	Okla. P. & R	2	Apr.1,21	25,200	1¾	1⅞	1¾	1¾	0
50¾	27½	69¾	42½	3,500,000	N.P.	Pacific Oil	1½SA	July20,22	43,400	46	47¼	44	45⅝	+ ⅛
79¾	38½	100⅞	48⅞	48,292,450	50	Pan. Amer. P. & T	1.50Q	Oct. 10,22	72,300	94½	95	90	91⅜	− 2⅜
71¾	34⅛	95¾	44	56,156,450	50	do B	1.50Q	Oct.10,22	82,200	87⅜	88	83⅛	84¼	− 2⅞
15½	6	12	3	198,770	N.P.	Panhandle P. & R			5,700	4⅜	5⅛	†3	3½	− ⅝
78½	68	78	61	3,082,700	100	do pfd	2Q	Jan.2,23						
34¼	16	59¼	28¼	696,910	N.P.	Phillips Pet	.50Q	Jan.2, 23	32,800	44¼	47¼	44⅛	46⅞	+ 3
14⅜	5¼	12¼	3⅞	29,622,925	25	Pierce Oil			11,500	4⅜	4⅜	†3⅞	4	− ¼
78	30½	71	35	14,634,000	100	do pfd	2Q	Feb.1,22	5,700	37	39½	35¼	38⅞	+ 2¾
54½	20¾	51	24⅛	18,182,400	50	Prod. & Ref			148,500	42⅞	50⅛	42⅞	50	+ 7
40	35	49	36	2,961,950	50	do pfd	87½Q	Nov.6,22	900	45	47	45	47	+ 3
40⅜	21¾	38¾	26½	64,487,525	25	Pure Oil	.50Q	Dec .1,22	14,500	27⅜	27½	26⅞	27½	+ ¼
		102¾	94	10,000,000	100	do 8% pfd	2Q	Jan.2,23	600	99½	99⅞	99⅜	99⅞	+ ¼
69⅛	40½	67	47¼	(sh)833,651	13.40	Roy. Dutch, N. Y	10Int.	Jan.1,23	11,100	53¼	53½	52⅛	52⅜	− ⅛
49	30⅛	48½	34½	(sh)238,510	1	Shell Transport	1.55¼	July25,22	1,500	38¾	38¾	38½	38¾	− ⅛
		13¼	12⅛	8,000,000	N.P.	Shell Union	.25Q	Dec.30,22	29,100	12¾	13¼	x12⅛	12½	− ¼
		96½	90	20,000,000	100	do pfd	1½Q	Nov.15,22	1,400	91	92⅛	90½	92	+ 1¼
28½	16¼	38¾	18¾	4,475,376	N.P.	Sinclair Cons	.50Q	Nov..15,22	57,700	32	33⅝	31⅝	32½	+ ½
		102	97¾	19,999,500	100	do pfd	2Q	Nov.30,22	1,800	99¾	99¾	98	98¼	− 1¾
		11⅞	8¾	19,989,450	10	Skelly Oil			40,700	9¾	9¾	9½	9⅝	+ ⅛
98½	67¾	135	91¾	102,057,975	25	S. O. California	1.00Q	Dec. 15,22	12,300	117¼	120	117¼	118⅝	+ 1¼
192¼	124½	250½	169	98,338,306	25	S. O. New Jersey	1.25Q	Dec. 15,22						
		40¼	38⅛	397,929,700	25	do new			66,900	39⅛	40¼	38¼	39⅛	+ ⅜
114½	104¼	120	113⅜	198,349,800	100	do pfd	1¾Q	Dec. 15,22	2,800	116¾	117¾	116¾	117½	+ ⅞
13¼	5¼	10¼	4	451,708	N.P.	Superior Oil	.50	Dec.20,20	4,600	4¼	4¾	4	4¾	+ ½
48	29	52½	42	164,450,000	25	The Texas Co	.75Q	Dec.30,22	33,000	47⅜	49	47¼	49	+ 1¾
36⅞	19¼	32¾	18	8,362,250	10	Tex. Pac. C & O	.25Q	Jan. 2,23	22,500	20¾	21	19⅞	20⅝	− ⅝
175	119	154	107⅜	49,672,100	100	Tide Water	2Q	Dec.30,21	900	125¼	129⅞	125	125	0
18	6	20⅛	7½	2,000,000	N.P.	Transcont. Oil			31,500	13¾	14½	13¼	14	+ 1
25½	15¼	25	13¾	1,389,417	N.P.	Union Oil			4,800	19	19½	18⅞	19½	+ ¾
107	87½	134¾	96	12,000,000	100	Union Tank Car	1¾Q	Dec. 1,22	300	129⅞	129⅞	x85⅞	85⅞	−45⅛
107	92	113	102	12,000,000	100	do pfd	1¾Q	Dec. 1,22	500	109½	109⅞	109	109	− ½
		34	25	400,000	N P.	White Eagle	.50Q	Oct.10,22	3,300	27	27½	26½	26¾	0
17⅝	7	11⅜	2⅛	959,046	N.P.	White Oil			29,600	3	3¾	†2⅛	3¼	+ ⅛

*New High †New Low ‡In Scrip xEx—dividend Total Sales 1,112,800

Standard Oil Stocks Traded In New York Curb Market

1921 High	1921 Low	1922 High	1922 Low	Outstanding Capital	Par Value	Stocks	Div. Rate	Last Paid	Transactions Week Ended Dec. 29 Sales	First	High	Low	Last	Ch'ge
22	14	25	16⅝	3,000,000	1	Anglo Amer. Oil	45cS.A.	July 15, 22	5,800	17¾	18⅛	17¼	17½	− ½
24½	6¾	12⅜	5½	(sh) 500,000	N.P	Atlantic-Lobos			2,900	6¼	6¼	†5½	5½	− ¾
385	325	610	335	3 200 000	100	Borne-Scrymser	20 S.A.	Oct. 15, 22						
88	70	109½	83	10,000,000	50	Buckeye Pipe Line	4Q	Dec. 15, 22	1,070	86	87	85	87	+ 1
200	100	225	177	1,500,000	100	Chesebrough Mfg	3½Q	Dec. 28, 22						
108	95	115	104	1,000,000	100	do pfd	1¾Q	Dec. 28, 22						
128	100	152½	125	10,000,000	100	Continental Oil	2Q	Dec. 15, 22	110	152	153	151	153	+ 3
35	24	49	28	3,000,000	50	Crescent Pipe	1½Q	Dec. 15, 22	1,320	44	46	44	45	− ½
150	115	185	115	1,500,000	100	Cumberland Pipe	12A	Dec. 15, 22	20	163	163	163	163	− 2
105	70	103½	79½	5,000,000	100	Eureka Pipe Line	2Q	Nov. 1, 22	80	97	97	96	97	− 1
55	29	62	40	16,000,000	100	Galena-Signal Oil	1Q	Dec. 30, 22	205	57½	57½	55	57½	− ½
106	86	105	100	4,000,000	100	do new pfd	2Q	Dec. 30, 22						
106	84	114	104	2,000,000	100	do old pfd	2Q	Dec. 30, 22						
260	150	261	212½	25,000,000	100	Humble O. & R	2Q	Jan. 1, 23						
195	140	198	154	20,000,000	100	Illinois Pipe Line	8 S.A.	Dec. 30, 22	385	162	164	159	164	+ 2
115	76	130¾	97½	39,222,750	25	Imperial Oil, Ltd	3Q	Dec 15, 22	1,035	114	114½	111⅝	113½	− 1⅜
109	68	111	84	5,000,000	50	Indiana Pipe Line	4Q	Nov.15, 22	215	91	93	91	93	+ 3
17¾	9⅛	27½	14	sh7,188,138	N.P	International	25c	Nov. 20, 22	12,700	20¾	21⅜	20⅝	21⅜	+ ⅝
165	110	259	150	120,000,000	100	Magnolia Pet	1½Q	Oct. 2. 22	25	240	240	240	240	0
		158	156		100	do new			20	158	158	156	156	
30½	22	31⅛	23	6,362,500	12½	National Transit	4Q	Dec. 15, 22	1,135	25⅞	26	25⅛	26	+ ⅜
167	115	214	117	5,000,000	100	New York Transit	4Q	Oct. 14, 22	180	128	130	†117	130	0
99½	83	127	90	4,000,000	100	Northern Pipe Line	8S.A.	Jan. 1, 23	80	106½	111	106½	111	+ 8
301	222	365	257	15,000,000	25	Ohio Oil	3Q	Dec. 30, 22	10	285	285	285	285	− 5
		73½	71		25	do new			400	73	*73½	73	73½	+ 1½
40	16	44⅜	16	10,000,000	25	Penn-Mex Fuel			500	17½	17½	†16	16½	− 1½
398	385	750	520	18,000,000	100	Prairie O. & G	3Q	Oct. 31, 22	90	613	624	613	622	+12
242	155	322	224	27,000,000	100	Prairie Pipe Line	3Q	Oct. 31, 22	540	315	325	311	325	+ 7
425	330	405	370	2,000,000	100	Solar Refining	8S.A.	Dec. 20, 22						
121	70	110	77	10,000,000	100	Southern Pipe Line	2Q	Dec. 1, 22	575	97	97	93	97	− 4
266	150	249	150	20,000,000	100	South Penn Oil	1½Q	Sept. 30, 22	675	159	163	†150	163	+ 6
75	50	70½	50½	3,500,000	100	Southwest Pa. P. L	1Q	Oct. 2, 22	50	66	66	64	65	+ 1
		62	55½		25	S. O. California (new)			11,000	59¼	60	58¾	59½	+ 1
93⅞	60¾	135	83¾	107,360,455	25	S. O. Indiana	4Q	Dec. 15, 22	34,700	115¾	117⅝	115¾	117¼	+ 1⅝
		59⅝	58⅜		25	do new			19,000		59⅜	58⅜	59⅜	
635	520	690	560	2,000,000	100	S O. Kansas	3Q	Dec. 15, 22						
		44½	41		25	do (new) w. i.			3,400	42½	*44½	42⅜	44½	+ 2
445	315	131	76½	10,000,000	25	S. O. Kentucky	5Q	Jan. 3, 23	3,300	123	*131	122⅞	127½	+ 4½
191	130	217	170	3,000,000	100	S. O. Nebraska	8S.A	Dec. 30, 22	60	185	185	180	180	−10
393	296	675	341	75,000,000	100	S. O. New York	4Q	Dec. 15, 22						
		57	41⅛	225,000,000	25	do (new) w.i.			17,200	46¾	48¾	46¼	48¾	+ 1⅞
429	329	585	261	7,000,000	100	S. O. Ohio	3Q	Jan.'1, 23						
112	105	119½	113½	7,000,000	100	do pfd	1¾Q	Dec. 1, 22						
885	23.	710	299	15,000,000	100	Vacuum Oil	8S.A.	Nov. 29, 22						
		46	36¼		25	do (new) w.i.			30,000	40	*46	40	45⅞	+ 5½

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CARL H. PFORZHEIMER & CO.

Dealers in Standard Oil Securities
25 Broad St. New York

New York Bonds

Week Ended Dec. 30

	High	Low	Last
Atlantic Ref. 5s	99⅝	98¾	99¼
Barnsdall A 8s	102⅝	101¾	102⅝
Empire Gas & Fuel 7½s	93⅞	93	93⅝
Humble 5½s	98⅜	97¾	98⅜
Marland 8s	103	101	103
do 8s war	113	111	111½
do B 7½s	102½	102½	102½
do B 7½s war	101¾	101¼	101¼
Mexican Pet. 8s	110	109	109
Pan-American 8s	103¾	102¾	103½
Pierce 8s	96½	95	96½
Prod. & Ref. 8s	108¼	108	108
do 8s war	123	120	123
Sinclair Cons. 7s	101	100½	100⅞
Sinclair C. O. P. 5½s	98½	98⅛	98⅜
Sinclair P. L. 5s	89	88¼	88⅞
S O. California 7s	106⅛	105	106
Tide Water 6½s	103⅜	103	103
Union of Calif. 6s	102¼	101⅞	102¼
Union Tank Car 7s	104	103¾	103¾

Miscellaneous Stocks

	Par Value	Dec. 29 Bid	Asked	1921 High	Low
National. Refg. (a).	25	50⅛	52	45	26½
do pfd. (a)	100	126	....	118½	107
Paragon Refg. (a)	25	11½	12½	25½	9½
do pfd. (a)	100	....	....	96	93
Indiahoma (b)	5	12½	13	7⅛	2
Marland Refg. (b)	5	.....	....	80⅞	12¼

(a) Cleveland (b) St. Louis

Unlisted Stocks

By Carl H. Pforzheimer & Co.

Gulf Oil Corp	825	53½	54	392	260
Humble Oil & Refg	100	...	...	261	150
do new	25	32	34	...	...
Magnolia Petroleum.	100	153	156	165	110

New York Curb Market

1921 High	1921 Low	1922 High	1922 Low	Par Value		Transactions Week Ended Dec. 29 Sales	First	High	Low	Last	Ch'ge
10¾	3½	9⅜	3¼	25c	Carib.Synd.Ctf	8,100	5½	5⅝	4⅞	5⅛	− ⅛
256	101	242	158	100	Cities Service	765	171½	177	170	176	+5
71	35	72	51	100	do pfd	1,200	67¼	67¾	67¼	67½	+ ½
31½	11¼	25½	17	10	do bankers' ctf	1,700	17¼	17⅞	17⅛	17½	+ ⅜
2¼	1⅛	2¼	.65	5	Federal Oil	49,300	.80	.80	.66	.68	−.10
15	6	19½	8⅞	N.P.	Fensland Oil	13,600	14	17	14	16½	+2¾
2⅛	1	1 11/16	.83	10	Glenrock Oil	12,000	1	1½	1	1 1/16	0
24	1	9⅝	2⅝	N.P.	Gilliland	3,700	3	3	2¾	2⅞	0
.....	.....	810	310	100	Gulf Oil	.....	.....	.....	.....	.....	.....
.....	.....	71½	48½	25	do (new)	17,200	49⅝	54	49⅝	53½	+4
18½	15¾	26½	2¼	N.P.	Kirby Petroleum	8,800	3	3¼	†2¼	3¼	+ ¼
.....	.....	48	40	N.P.	Mammoth Oil	28,900	42⅜	*48	42⅜	47¼	+4⅝
32½	10½	27⅞	12¾	N.P.	MaracaiboOilExp.	9,800	15½	15⅞	12⅞	12⅞	−2
2½	.74	10	1	N.P.	Marland of Mex.	2,800	3⅞	4	3⅝	3⅝	+ ⅛
15⅝	6⅜	14⅞	6¾	10	Merritt Oil	6,300	7¾	8¼	7½	8¼	+1
13⅛	5½	19	9⅜	10	Mountain Prod	13,300	18	18¼	17¾	17¾	0
10	5	13¼	5¾	5	Mutual Oil	44,800	11⅝	12⅛	11⅝	12⅛	+ ½
.....	.....	88	40	10	NewEng.FuelOil	500	47	47	46⅛	46⅜	− ⅝
.....	.....	37	11¾	25	New York Oil	300	17	17	16	16	−1
3¼	1	8	1½	5	N. Amer. Oil	.....	.....	.....	.....	.....	.....
3	.64	3	.67	10	Omar O. & G	12,800	1 1/16	1⅛	1 1/16	1⅛	+ 1/16
7	3	9¾	4⅞	10	Pennok Oil	1,200	9⅜	9⅝	9⅛	9¼	− ¼
.....	.....	14¾	10	10	Salt Creek Cons	500	11	11¼	10¾	11	+1
15¾	9¼	21¾	12½	10	Salt Creek Prod	6,100	21¾	*21¾	20⅞	21¼	− ⅛
5⅛	2¾	5	2¾	5	Sapulpa Refining	3,500	2⅞	3	2¾	3	0
.....	.....	14	9⅛	N.P.	Shell Union w.i	.....	.....	.....	.....	.....	.....
13⅜	5¼	13⅞	8	N.P.	Simms Pet	15,300	13½	*13⅞	12½	13	− ¼
.....	.....	21	12¼	N.P.	Southern States	9,000	18½	18⅝	15	15⅝	−2⅞
5	1⅜	7⅞	2¼	5	Wilcox O. & G	10,900	6¼	6½	6¼	3½	+ ⅜

Pittsburgh Curb Market

1921 High	1921 Low	1922 High	1922 Low	Par Value		Transactions Week Ended Dec. 29 Sales	First	High	Low	Last	ch'ge
.....	.....	.....	.....	1	Boston-Wyoming	.....	.....	.....	.....	.....	.....
3½	1	4¾	1¾	5	Colombia Synd	600	1¼	1¼	1⅛	1⅛	− ⅛
.....	.....	.....	.....	.....	Crescent Pipe Line	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	5	Duquesne Oil	10,700	1⅛	1⅛	1½	1¾	− ⅛
892	300	800	315	100	Gulf Oil Corp	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	25	do. new	20	50½	50½	50½	50½	+ ½
.45	.16	.42	.20	1	Mex.-Wyo. Oil	3,700	.27	.28	.27	.28	−.01
.....	.....	.....	.....	.....	States Oil	.....	.....	.....	.....	.....	.....
24	05	09	06	5	Twin City Oil	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	Guffey-GilGasProd	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	1	Homer Union Pet	100	.02	.02	.02	.02	.....
.....	.....	.....	.....	5	Mutual Oil	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	Ind. Nat. Gas	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	10	Marshall Oil	100	7	7	7	7	.....
.12	01	.06	.03	1	West Texas	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	25	Ohio Oil	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	N. P.	Marland of Mexico	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	Oklahoma Eastern	2,400	1½	1½	1½	1½	+1¼
.....	.....	.....	.....	10	Omar Oil & Gas	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	Noble Oil & Gas	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	International Pet	100	.....	20¾	20¾	20¾	.....
.....	.....	.....	.....	.....	Penn-Mex Fuel	100	19	19	19	19	.....

*New High †New Low xEx. Dividend or Ex. Interest ‖ Ex. Rights

Pittsburgh Stock Exchange

1921 High	1921 Low	1922 High	1922 Low	Par Value		Transactions Week Ended Dec. 29 Sales	First	High	Low	Last	Ch'ge
19	6½	12⅝	7	10	ArkansasNat Gas	3,885	9⅜	9½	9	9⅛	− ⅛
35	18½	55½	20	25	Barnsdall Corp. A	.....	.....	.....	.....	.....	.....
35	17⅜	38½	20	25	Barnsdall Corp. B	.....	.....	.....	.....	.....	.....
66	60	112¾	64½	100	Columbia Gas	.....	.....	.....	.....	.....	.....
26	16¾	31⅛	20	25	Lone Star Gas	20	25⅜	25¾	25¼	25¼	− ¾
53	48	58½	45⅝	50	Man.Light&Heat	331	58½	58⅞	x67⅜	56⅞	−1⅝
.....	.....	.....	.....	N. P.	Marland Oil	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	10	Kansas & Gulf	.....	.....	.....	.....	.....	.....
16⅛	10⅞	24¼	13⅛	10	Middle States	.....	.....	.....	.....	.....	.....
30¾	17½	26¾	15½	25	Okla Nat Gas	358	21	x21	20½	20½	−1
24	11½	23	15⅛	1	Ohio Fuel Oil	170	16	16	15½	15½	− ½
50	40	60	44½	25	Ohio Fuel Supply	235	59½	60	59	60	+ ½
.....	.....	.....	.....	5	Okla.Prod.&Ref	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	Pierce Oil	300	4	4	4	4	−
.....	.....	.....	.....	N. P.	Sinclair Cons	20	32	32	2	32	−
.....	.....	14⅞	8¼	10	Salt Creek Con	1650	11	11½	11	11	+ ⅞
27	25	29⅞	6⅜	N.P.	Tidal Osage Oil	470	10⅛	10⅝	10	10	−1
.....	.....	.....	.....	25	Texas Co	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	N. P.	Transcontinental	10	13¾	13¾	13¾	13¾	−
120	107½	170	119	100	Union Nat. Gas	50	170	170	170	170	0
.....	.....	.....	.....	.....	do new (W. I.)	226	24⅞	25	24½	24½	− ⅝